

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,1 C
Edition : 21.08.92
Replaces : 02.91
Test oil : ISO-4113
Combination no. : 0 403 476 098
Injection pump
Pump designation : PES6MW100/720RS1130
EP type number : 0 413 406 122
Governor
Governor design. : RSV350...1075MWOA318
-7
Governor no. : 0 420 085 158

Customer-spec. information
Customer : MB-NFZ

Engine : OM 366 A

1st version kw : 111.0
Rated speed : 2150

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
: (3.65...3.85)

AO1

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1060

Rack travel in mm : 11.20...11.30

Del.quantity cm3/ : 7.4...7.6
100 s: (7.2...7.8)

Spread cm3 : 0.3
100 s: (0.6)

2nd speed rpm : 350.0
Rack travel in mm : 7.4...7.6
Del.quantity cm3/ : 0.9...1.3
100 s: (0.6...1.5)
Spread cm3 : 0.3
100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...1.00

Governor spring pre-tension
Click setting x : 3.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1060
Del.quantity : 74.0...76.0
1000 : (72.0...78.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 96...104

Setting point:
Speed rpm : 800
Rack travel in mm : 0.6

Testing:
1st rack travel in: 10.20

Speed rpm : 1100...1110
2nd rack travel in: 4.00
Speed rpm : 1180...1210
4th rack travel in: 1300
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 74...82
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 7.5

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 350
Rack travel in mm : 7.40...7.60
Rack travel in mm : 2.00
Speed rpm : 450...510

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Dimension a mm : 0.60
Torque control curve - 1st version
1st speed rpm : 1060
Rack travel in m: 11.20...11.30
2nd speed rpm : 600
Rack travel in m: 11.80...11.90
3rd speed rpm : 900
Rack travel in m: 11.40...11.60

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm³/ : 61.5...64.5
1000 s: (59.0...67.0)
Spread cm³ : 5.00
1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.20
Speed rpm : 1100...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 78.0...88.0
1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 7.40...7.60
Del.quantity cm³/ : 9.0...13.0
1000 s: (6.5...15.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,1 B 5
 Edition : 21.08.92
 Replaces : 09.91
 Test oil : ISO-4113
 Combination no. : 0 403 476 109
 Injection pump
 Pump designation : PES6MW100/72ORS1131-
 1
 EP type number : 0 413 406 165
 Governor
 Governor design. : RSV350...1300MWOA329
 -10
 Governor no. : 0 420 085 178

Customer-spec. information
 Customer : MB-NFZ

Engine : OM 366 LA

1st version kW : 155.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70
 : (3.55...3.75)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1280
 Rack travel in mm : 13.10...13.20
 Del.quantity cm³/ : 9.8...10.0
 100 s : (9.6...10.2)
 Spread cm³ : 0.3
 100 s : (0.6)

2nd speed rpm : 350.0
 Rack travel in mm : 5.8...6.0
 Del.quantity cm³/ : 0.9...1.3
 100 s : (0.6...1.5)
 Spread cm³ : 0.3
 100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1280
 Aneroid pressure h: 1000
 Del.quantity : 98.0...100.0
 1000 : (96.0...102.0)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 105...113

Setting point:
 Speed rpm : 800
 Rack travel in mm : 0.6

Testing:
 1st rack travel in: 11.0

Speed rpm : 1330...1335 *
2nd rack travel in: 4.00
Speed rpm : 1410...1423
4th rack travel in: 1550
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 72...80
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.9

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 350
Rack travel in mm : 5.80...6.00

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.10...10.20

Measurement

Speed 1/min : 500

1st pressure hPa : 350
Rack travel in m: 11.00...11.10
2nd pressure hPa : 550
Rack travel in m: 12.40...12.70
3rd pressure hPa : 1000
Rack travel in m: 13.10...13.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 600
Del.quantity cm³/ : 85.0...88.0
1000 s: (82.5...90.5)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 35.0...37.0
1000 s: (33.0...39.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.0
Speed rpm : 1330...1335

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 100.0...110.0
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.80...6.00
Del.quantity cm³/ : 9.0...13.0
1000 s: (6.5...15.5)
Spread cm³ : 3.50
1000 s: (5.00)

Remarks:

:
Test hydr. locking device for starting
with 500...1000 hPa air pressure.

* Read off speed set under 1.
Add 80...88 min⁻¹ to this speed. The
control-rod travel under 2. must be
attained with the calculated speed
profile.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB6, 1B11
 Edition : 21.08.92
 Replaces : 12.91
 Test oil : ISO-4113

Combination no. : 0 403 476 110

Injection pump
 Pump designation : PES6MW100/720RS1131-1

EP type number : 0 413 406 165
 Governor
 Governor design. : RSV350...1300MWOA329-11

Governer no. : 0 420 085 181

Customer-spec. information
 Customer : MB-NFZ

Engine : OM366LA

1st version kW : 170.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70
 : (3.55...3.75)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1280

Rack travel in mm : 14.40...14.50

Del. quantity cm³/ : 11.4...11.6

100 s: (11.2...11.8)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.1...6.3

Del. quantity cm³/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1280

Aneroid pressure h: 1000

Del. quantity : 114.0...116.0

1000 : (112.0...118.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 91...99

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 13.4

Speed rpm : 1330...1335 *
2nd rack travel in: 4.00
Speed rpm : 1410...1423
4th rack travel in: 1550
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 75...83
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.2

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 350
Rack travel in mm : 6.10...6.30

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.70...10.80

Measurement

Speed 1/min : 500

1st pressure hPa : 350
Rack travel in m: 11.90...12.10
2nd pressure hPa : 500
Rack travel in m: 13.10...13.30
3rd pressure hPa : 1000
Rack travel in m: 14.40...14.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 750
Del.quantity cm³/ : 106.5...109.5
1000 s: (104.0...112.0)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 41.0...43.0
1000 s: (39.0...45.0)

BREAKAWAY

A06

1st version
1mm rack travel less than

full load rack tr: 13.4
Speed rpm : 1330...1335

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 100.0...110.0
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.10...6.30
Del.quantity cm³/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

Test hydr. locking device for starting
with 500...1000 hPa air pressure.

* Read off speed set under 1.
Add 80...88 min⁻¹ to this speed. The
control-rod travel under 2. must be
attained with the calculated speed
profile.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE
 Edition : 03.12.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 476 112
 Injection pump
 Pump designation : PES6MW100/72ORS1225-
 1
 EP type number : 0 413 406 220
 Governor
 Governor design. : RSV400...1000MW1A338
 -1
 Governor no. : 0 420 085 184

Customer-spec. information
 Customer : LIEBHERR

Engine : D 916 TI

1st version kW : 173.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 049

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10
 : (2.95...3.15)
 Rack travel in mm : 9.00...12.00
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.20...13.30

Del. quantity cm³/ : 14.4...14.6

100 s: (14.2...14.8)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 6.1...6.3

Del. quantity cm³/ : 2.0...2.4

100 s: (1.8...2.7)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1000

Del. quantity : 144.0...146.0

1000 : (142.0...148.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 96...104

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:
1st rack travel in: 12.20
Speed rpm : 1020...1030
2nd rack travel in: 4.00
Speed rpm : 1060...1090
3rd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1200
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.7

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.60...5.80

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000
Rack travel in m: 13.20...13.30
2nd speed rpm : 500
Rack travel in m: 13.20...13.30
3rd speed rpm : 700
Rack travel in m: 13.20...13.30
5th speed rpm : 400
Rack travel in m: 14.40...14.70

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 550
Pressure hPa : -
Rack travel mm : 11.10...11.30

Measurement

Speed 1/min : 550

1st pressure hPa : 330
Rack travel in m: 11.60...11.70
2nd pressure hPa : 510
Rack travel in m: 12.50...12.70
3rd pressure hPa : 1000
Rack travel in m: 13.20...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm : 500
Del.quantity cm3/ : 142.0...145.0
1000 s: (139.5...147.5)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: 1000
Speed rpm : 700
Del.quantity cm3/ : 145.0...148.0
1000 s: (142.5...150.5)
Aneroid pressure h: -
Speed rpm : 550
Del.quantity cm3/ : 104.0...106.0
1000 s: (102.0...108.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.20
Speed rpm : 1020...1030

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 127.0...137.0
1000 s: (124.0...140.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 6.10...6.30
Del.quantity cm3/ : 20.5...24.5
1000 s: (18.0...27.0)
Spread cm3 : 3.50
1000 s: (5.00)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE
 Edition : 03.12.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 476 112A
 Injection pump
 Pump designation : PES6MW100/720RS1225-
 1
 EP type number : 0 413 406 220
 Governor
 Governor design. : RSV400...1000MW1A338
 -1
 Governor no. : 0 420 085 184

Customer-spec. information
 Customer : LIEBHERR

Engine : D 916 TI

1st version kW : 173.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 049

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10
 : (2.95...3.15)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.20...13.30

Del.quantity cm³/ : 14.4...14.6

100 s: (14.2...14.8)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 6.1...6.3

Del.quantity cm³/ : 2.0...2.4

100 s: (1.8...2.7)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1000

Del.quantity : 144.0...146.0

1000 : (142.0...148.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 96...104

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 12.20
Speed rpm : 1020...1030
2nd rack travel in: 4.00
Speed rpm : 1060...1090
3rd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1200
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.7

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.60...5.80

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 13.20...13.30
2nd speed rpm : 500
Rack travel in m: 13.20...13.30
3rd speed rpm : 700
Rack travel in m: 13.20...13.30
5th speed rpm : 400
Rack travel in m: 14.40...14.70

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 550
Pressure hPa : -
Rack travel mm : 11.10...11.30

Measurement

Speed 1/min : 550
1st pressure hPa : 330
Rack travel in m: 11.60...11.70
2nd pressure hPa : 510
Rack travel in m: 12.50...12.70
3rd pressure hPa : 1000
Rack travel in m: 13.20...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm : 500
Del.quantity cm3/ : 142.0...145.0
1000 s: (139.5...147.5)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: 1000
Speed rpm : 700
Del.quantity cm3/ : 145.0...148.0
1000 s: (142.5...150.5)
Aneroid pressure h: -
Speed rpm : 550
Del.quantity cm3/ : 104.0...106.0
1000 s: (102.0...108.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.20
Speed rpm : 1020...1030

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 127.0...137.0
1000 s: (124.0...140.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 6.10...6.30
Del.quantity cm3/ : 20.5...24.5
1000 s: (18.0...27.0)
Spread cm3 : 3.50
1000 s: (5.00)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 21.08.92
 Replaces : 02.92
 Test oil : ISO-4113
 Combination no. : 0 403 476 114
 Injection pump
 Pump designation : PES6MW100/720RS1131-
 1
 EP type number : 0 413 406 165
 Governor
 Governor design. : RSV750...1100MWA325
 -4
 Governor no. : 0 420 085 188

Customer-spec. information
 Customer : MB-NFZ

Engine : OM366LA

1st version kW : 170.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70
 : (3.55...3.75)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1080

Rack travel in mm : 13.00...13.10

Del. quantity cm³/ : 10.3...10.5

100 s: (10.1...10.7)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 750.0

Rack travel in mm : 5.8...6.3

Del. quantity cm³/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1080

Del. quantity : 103.0...105.0

1000 : (101.0...107.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 82...90

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 12.0

Speed rpm : 1120..1125 *

2nd rack travel in: 4.00
Speed rpm : 1145...1158
4th rack travel in: 1550
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 750
Rack travel in mm : 6.0

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 750
Rack travel in mm : 5.80...6.30

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1080
Rack travel in m: 13.00...13.10
2nd speed rpm : 925
Rack travel in m: 13.40...13.60
3rd speed rpm : 750
Rack travel in m: 13.90...14.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750
Del.quantity cm³/ : 108.0...111.0
1000 s: (105.5...113.5)
Spread cm³ : 5.00
1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.0
Speed rpm : 1120...1125

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 100.0...110.0
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 750
Rack travel in mm : 5.80...6.30

Del.quantity cm³/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

Test hydr. locking device for starting
with 500...1000 hPa air pressure.

* Read off speed set under 1.
Add 25...33 min⁻¹ to this speed. The
control-rod travel under 2. must be
attained with the calculated speed
profile.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 21.08.92
 Replaces : 07.92
 Test oil : ISO-4113
 Combination no. : 0 403 476 116
 Injection pump
 Pump designation : PES6MW100/720RS1131
 EP type number : 0 413 406 123
 Governor
 Governor design. : RSV350...1300MWA329
 -14
 Governor no. : 0 420 085 192

Customer-spec. information
 Customer : MB-NFZ

Engine : OM 366 A

1st version kw : 125.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1280
 Rack travel in mm : 10.50...10.60
 Del. quantity cm³/ : 8.8...9.0
 100 s : (8.6...9.2)
 Spread cm³ : 0.3
 100 s : (0.6)

2nd speed rpm : 350.0
 Rack travel in mm : 5.0...5.5
 Del. quantity cm³/ : 1.0...1.4
 100 s : (0.7...1.6)
 Spread cm³ : 0.3
 100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1280
 Aneroid pressure h: 800
 Del. quantity : 88.0...90.0
 1000 : (86.0...92.0)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 110...118

Setting point:
 Speed rpm : 800
 Rack travel in mm : 0.6

Testing:
 1st rack travel in: 9.50
 Speed rpm : 1330...1335 *
 2nd rack travel in: 4.00

Speed rpm : 1410...1423
4th rack travel in: 1550
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 75...83
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.2

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 350
Rack travel in mm : 5.00...5.50
Rack travel in mm : 2.00
Speed rpm : 420...480

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1280
Rack travel in m: 10.50...10.60
2nd speed rpm : 800
Rack travel in m: 11.20...11.30
3rd speed rpm : 1100
Rack travel in m: 10.80...11.00

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.20...9.30

Measurement

Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 9.70...9.90
2nd pressure hPa : 470
Rack travel in m: 10.50...10.70
3rd pressure hPa : 800
Rack travel in m: 11.20...11.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800
Speed rpm : 800
Del.quantity cm³/ : 88.0...91.0
1000 s: (85.5...93.5)

Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 49.0...51.0
1000 s: (47.0...53.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.50
Speed rpm : 1330...1335

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 78.0...88.0
1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.00...5.50
Del.quantity cm³/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

Test hydr. locking device for starting
with 500...1000 hPa air pressure.

* Read off speed set under 1.
Add 80...88 min⁻¹ to this speed. The
control-rod travel under 2. must be
attained with the calculated speed
profile.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 21.08.92
 Replaces : 03.92
 Test oil : ISO-4113
 Combination no. : 0 403 476 117
 Injection pump
 Pump designation : PES6MW100/720RS1131-1
 EP type number : 0 413 406 165
 Governor
 Governor design. : RSV750...1200MWA329-15
 Governor no. : 0 420 085 193

Customer-spec. information
 Customer : MB-NFZ

Engine : OM366LA

1st version kW : 148.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70
 : (3.55...3.75)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1180
 Rack travel in mm : 13.10...13.20
 Del. quantity cm³/ : 10.6...10.8
 100 s: (10.4...11.0)
 Spread cm³ : 0.3
 100 s: (0.6)

2nd speed rpm : 750.0
 Rack travel in mm : 4.8...5.3
 Del. quantity cm³/ : 1.0...1.4
 100 s: (0.7...1.6)
 Spread cm³ : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...1.00

Governor spring pre-tension
 Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1180
 Aneroid pressure h: 1000
 Del. quantity : 106.0...108.0
 1000 : (104.0...110.0)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 93...101

Setting point:
 Speed rpm : 800
 Rack travel in mm : 0.6

Testing:

1st rack travel in: 12.2
Speed rpm : 1230...1235
2nd rack travel in: 4.00
Speed rpm : 1310...1323
4th rack travel in: 1400
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 72...80
Setting point w/out bumper spring
Speed rpm : 750
Rack travel in mm : 5.0

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 750
Rack travel in mm : 4.80...5.30

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.30...9.40

Measurement

Speed 1/min : 500

1st pressure hPa : 350
Rack travel in m: 10.80...10.90
2nd pressure hPa : 500
Rack travel in m: 11.80...12.10
3rd pressure hPa : 1000
Rack travel in m: 13.10...13.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 600
Del.quantity cm3/ : 95.5...98.5
1000 s: (93.0...101.0)
Spread cm3 : 3.50
1000 s: (6.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 35.0...37.0
1000 s: (33.0...39.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.2
Speed rpm : 1230...1235

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...110.0
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 750
Rack travel in mm : 4.80...5.30
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:
Test hydr. locking device for starting
with 500...1000 hPa air pressure.

* Read off speed set under 1.
Add 80...88 min⁻¹ to this speed. The
control-rod travel under 2. must be
attained with the calculated speed
profile.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 21.08.92
 Replaces : 07.92
 Test oil : ISO-4113
 Combination no. : 0 403 476 120
 Injection pump
 Pump designation : PES6MW100/72ORS1131-1
 EP type number : 0 413 406 165
 Governor
 Governor design. : RSV350...750MWOA336-6
 Governor no. : 0 420 085 198

Customer-spec. information
 Customer : MB-NFZ

Engine : OM 366 LA

1st version kw : 87.0
 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70
 : (3.55...3.75)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.50...12.60

Del.quantity cm³/ : 8.5...8.7

100 s: (8.3...8.9)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.3...6.3

Del.quantity cm³/ : 0.9...1.3

100 s: (0.6...1.5)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 2.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 85.0...87.0

1000 : (83.0...89.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 71...79

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 11.5
Speed rpm : 750...755 *
2nd rack travel in: 4.00
Speed rpm : 775...788
4th rack travel in: 850
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 57...61
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.8

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 350
Rack travel in mm : 5.30...6.30

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.5
Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 88.0...98.0
1000 s: (85.0...101.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.30...6.30
Del.quantity cm³/ : 9.0...13.0
1000 s: (6.5...15.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:
* Read off speed set under 1.
Add 25...33 min⁻¹ to this speed. The
control-rod travel under 2. must be
attained with the calculated speed
profile.

Observe VDT-I-420/120

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC
Edition : 21.09.92
Replaces : 07.92
Test oil : ISO-4113

Combination no. : 0 403 476 121

Injection pump
Pump designation : PES6MW100/32ORS1198-1

EP type number : 0 413 406 211
Governor
Governor design. : RSV35G...1250MW2A347-1

Governer no. : 0 420 085 199

Customer-spec. information
Customer : NAVISTAR

Engine : DT-466

1st version kw : 172.0
Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x wall thickness
x length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.25...3.35
: (3.20...3.40)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
Phasing :
Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 12.00...12.10

Del.quantity cm3/ : 13.2...13.4
100 s : (13.0...13.6)

Spread cm3 : 0.3
100 s : (0.6)

2nd speed rpm : 350.0
Rack travel in mm : 4.6...4.8
Del.quantity cm3/ : 1.5...1.9
100 s : (1.3...2.2)
Spread cm3 : 0.3
100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...1.00

Governor spring pre-tension
Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1250
Aneroid pressure h: 900
Del.quantity : 132.5...134.5
1000 : (130.5...136.5)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 96...104

Setting point:

Speed rpm : 800
Rack travel in mm : 0.6

Testing:

1st rack travel in: 11.10
Speed rpm : 1290...1300
2nd rack travel in: 4.00
Speed rpm : 1345...1355
3rd rack travel in: 4.00
Speed rpm : 1350...1380
4th rack travel in: 1500
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 66...74
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 4.7

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 350
Rack travel in mm : 4.60...4.80

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.00...12.10

Measurement

Speed 1/min : 500
Rack travel in m: 8.80...9.00
2nd pressure hPa : 260
Rack travel in m: 10.20...10.30
3rd pressure hPa : 500
Rack travel in m: 11.30...11.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 80.5...84.5
1000 s: (78.5...86.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.10

A20

Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 145.0...165.0
1000 s: (140.0...170.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 4.60...4.80
Del.quantity cm³/ : 15.5...19.5
1000 s: (13.0...22.0)
Spread cm³ : 3.50
1000 s: (5.00)

Remarks:

: IHC #1819527C91

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF
 Edition : 05.10.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 476 122
 Injection pump
 Pump designation : PES6MW100/32ORS1227
 EP type number : G 413 406 215
 Governor
 Governor design. : RSV325...1300MWA350
 Governor no. : 0 420 085 200

Cust. part no. : 1249933

Customer-spec. information
 Customer : DAF

Engine : NS156L

1st version kW : 156.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

A21

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10
 : (2.95...3.15)
 Rack travel in mm : 13.50...0.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Phasing :
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000
 Rack travel in mm : 13.10...13.20
 Del. quantity cm³/ : 10.8...11.0
 100 s : (10.6...11.2)
 Spread cm³ : 0.3
 100 s : (0.6)

2nd speed rpm : 325.0
 Rack travel in mm : 4.4...4.6
 Del. quantity cm³/ : 0.7...1.1
 100 s : (0.4...1.3)
 Spread cm³ : 0.3
 100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...1.00

Governor spring pre-tension
 Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1000
 Aneroid pressure h: 1000
 Del. quantity : 108.5...110.5
 1000 : (106.5...112.5)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 98...106

Setting point:

Speed rpm : 800
Rack travel in mm : 0.6

Testing:

1st rack travel in: 12.10
Speed rpm : 1330...1340
2nd rack travel in: 4.00
Speed rpm : 1400...1430
3rd rack travel in: 4.00
Speed rpm : 1410...1440
4th rack travel in: 1550
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 66...74
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 4.0

Testing:

Speed rpm : 100
Speed rpm : 325
Rack travel in mm : 3.90...4.10
Rack travel in mm : 2.00
Speed rpm : 450...520

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 13.10...13.20

Measurement

Speed 1/min : 600

1st pressure hPa : 500
Rack travel in m: 12.50...12.60
2nd pressure hPa : 290
Rack travel in m: 11.10...11.40
3rd pressure hPa : -
Rack travel in m: 10.40...10.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 1300
Del.quantity cm³/ : 104.0...107.0
1000 s: (101.5...109.5)
Spread cm³ : 3.50
1000 s: (6.0)
Aneroid pressure h: -
Speed rpm : 600

Del.quantity cm³/ : 63.0...65.0
1000 s: (61.0...67.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.10
Speed rpm : 1330...1340

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.40...4.60
Del.quantity cm³/ : 7.0...11.0
1000 s: (4.5...13.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

: DAF #1249933

Start-of-delivery mark is at start of
delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC
 Edition : 21.08.92
 Replaces : 07.92
 Test oil : ISO-4113

Combination no. : 0 403 476 124

Injection pump
 Pump designation : PES6MW100/32ORS1213
 EP type number : 0 413 406 203
 Governor
 Governor design. : RSV350...1150MWSA347
 -2

Governer no. : 0 420 085 202

Cust. part no. : 1818557C91

Customer-spec. information
 Customer : NAVISTAR

Engine : DT-466

1st version kw : 204.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness : 6.00X2.00X600
 x Length mm

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.25...3.35
 : (3.20...3.40)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 14.90...15.00

Del.quantity cm³/ : 16.4...16.6

100 s: (16.2...16.8)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.0...5.2

Del.quantity cm³/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1200

Del.quantity : 164.5...166.5

1000 : (162.5...168.5)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 98...106

Setting point:
Speed rpm : 800
Rack travel in mm : 0.6

Testing:
1st rack travel in: 13.90
Speed rpm : 1160...1170
2nd rack travel in: 4.00
Speed rpm : 1230...1240
3rd rack travel in: 4.00
Speed rpm : 1235...1245
4th rack travel in: 1350
Speed rpm : 0.30...1.70

LOW IDLE 1
Control lever
position degrees: 66...74
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.1

Testing:
Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 350
Rack travel in mm : 5.00...5.20

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 14.90...15.00

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.50...9.70
2nd pressure hPa : 300
Rack travel in m: 11.10...11.20
3rd pressure hPa : 760
Rack travel in m: 13.20...13.60

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 79.5...83.5
1000 s: (77.5...85.5)

BREAKAWAY

1st version

A24

1mm rack travel less than
full load rack tr: 13.90
Speed rpm : 1160...1170

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 170.0...190.0
1000 s: (165.0...195.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.00...5.20
Del.quantity cm3/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm3 : 3.50
1000 s: (5.00)

Remarks: : IHC #1818557C91

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC
 Edition : 31.08.92
 Replaces : 07.92
 Test oil : ISO-4113

Combination no. : 0 403 476 125

Injection pump
 Pump designation : PES6MW100/32ORS1198-1

EP type number : 0 413 406 211
 Governor
 Governor design. : RSV350...1100MW2A347-3

Governer no. : 0 420 085 203

Customer-spec. information
 Customer : NAVISTAR

Engine : DT-466

1st version kW : 184.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.25...3.35
 : (3.20...3.40)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Phasing :
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.70...12.80

Del.quantity cm³/ : 13.9...14.1

100 s: (13.7...14.3)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 4.8...5.0

Del.quantity cm³/ : 1.5...1.9

100 s: (1.3...2.2)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del.quantity : 139.0...141.0

1000 : (137.0...143.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 90...98

Setting point:

Speed rpm : 800
Rack travel in mm : 0.6

Testing:

1st rack travel in: 11.70
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1195...1205
3rd rack travel in: 4.00
Speed rpm : 1200...1210
4th rack travel in: 1350
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 64...72
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 4.9

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 350
Rack travel in mm : 4.80...5.00

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.70...12.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.30...9.50
2nd pressure hPa : 255
Rack travel in m: 10.30...10.40
3rd pressure hPa : 535
Rack travel in m: 11.70...12.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 83.0...87.0
1000 s: (81.0...89.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 150.0...170.0
1000 s: (147.0...173.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 4.80...5.00
Del.quantity cm³/ : 15.5...19.5
1000 s: (13.0...22.0)
Spread cm³ : 3.50
1000 s: (5.00)

Remarks:

: IHC #1819454C91

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VME
 Edition : 03.12.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 476 126
 Injection pump
 Pump designation : PES6MW100/320RS1132
 EP type number : 0 413 406 124
 Governor
 Governor design. : RSV300...1050MW4A352
 Governor no. : 0 420 085 201

Customer-spec. information
 Customer : VME

Engine : TD 61

1st version kW : 122.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.90...3.00
 : (2.85...3.05)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.10...11.20

Del.quantity cm³/ : 9.2...9.4

100 s: (9.0...9.6)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.2

Del.quantity cm³/ : 1.2...1.6

100 s: (0.9...1.8)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1000

Del.quantity : 92.0...94.0

1000 : (90.0...96.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 116...124

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 10.10

Speed rpm : 1070...1080
2nd rack travel in: 4.00
Speed rpm : 1110...1140
3rd rack travel in: 4.00
Speed rpm : 1120...1150
4th rack travel in: 1250
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 76...84
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.6

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 300
Rack travel in mm : 5.50...5.70
Rack travel in mm : 2.00

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 1000
Pressure hPa : 1000
Rack travel mm : 11.10...11.20

Measurement

Speed 1/min : 1000

1st pressure hPa : -
Rack travel in m: 10.00...10.10
2nd pressure hPa : 80
Rack travel in m: 10.30...10.40
3rd pressure hPa : 140
Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 1000
Del.quantity cm³/ : 77.0...79.0
1000 s: (75.0...81.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10
Speed rpm : 1070...1080

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 100.0...110.0
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.00...6.20
Del.quantity cm³/ : 12.0...16.0
1000 s: (9.5...18.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 03.12.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 403 476 127

Injection pump
 Pump designation : PES6MW100/72ORS1205
 EP type number : 0 413 406 195
 Governor
 Governor design. : RSV750...1250MWOA325
 -5
 Governor no. : 0 420 085 208

Customer-spec. information
 Customer : MB-NFZ

Engine : OM 366 LA

1st version kw : 185.0
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 3.20...3.30
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1230

Rack travel in mm : 15.20...15.30

Del.quantity cm³/ : 12.4...12.6
 100 s: (12.2...12.8)

Spread cm³ : 0.3
 100 s: (0.6)

2nd speed rpm : 750.0
 Rack travel in mm : 4.9...5.5
 Del.quantity cm³/ : 1.0...1.4
 100 s: (0.7...1.6)
 Spread cm³ : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...1.00

Governor spring pre-tension
 Click setting x : 1.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1230
 Del.quantity : 124.0...126.0
 1000 : (122.0...128.0)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 90...98

Setting point:
 Speed rpm : 800
 Rack travel in mm : 0.6

Testing:
 1st rack travel in: 14.2

Speed rpm : 1270...1275 *
2nd rack travel in: 4.00
Speed rpm : 1295...1308
4th rack travel in: 1400
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 73...81
Setting point w/out bumper spring
Speed rpm : 750
Rack travel in mm : 5.2

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 750
Rack travel in mm : 4.90...5.50

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800
Del. quantity cm³/ : 120.0...123.0
1000 s: (117.5...125.5)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.2
Speed rpm : 1270...1275

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 110.0...120.0
1000 s: (107.0...123.0)

LOW IDLE

Speed rpm : 750
Rack travel in mm : 4.90...5.50
Del. quantity cm³/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm³ : 3.50
1000 s: (5.00)

Remarks:

:

* Read off speed set under 1.
Add 25...33 min⁻¹ to this speed. The
control-rod travel under 2. must be
attained with the calculated speed
profile.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 7,3 B
 Edition : 27.11.92
 Replaces : 09.91
 Test oil : ISO-4113

Combination no. : 0 403 486 103

Injection pump
 Pump designation : PES6MW100/321RS1208
 EP type number : 0 413 406 199
 Governor
 Governor design. : RSV300...1050MWOA802
 -2

Governer no. : 0 420 085 156

Customer-spec. information
 Customer : MAN

Engine : D0826LE 10

1st version kw : 165.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60
 : (3.45...3.65)

B03

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 14.00...14.10

Del.quantity cm³/ : 14.0...14.2

100 s: (13.8...14.4)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.0...5.2

Del.quantity cm³/ : 1.1...1.5

100 s: (0.8...1.7)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 3.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 140.0...142.0

1000 : (138.0...144.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 87...95

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 13.00

Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1140...1170
4th rack travel in: 1300
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 64...72
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.1

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 300
Rack travel in mm : 5.00...5.20

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm³/ : 139.5...142.5
1000 s: (137.0...145.0)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 800
Del.quantity cm³/ : 145.5...148.5
1000 s: (143.0...151.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 130.0...150.0
1000 s: (127.0...153.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.00...5.20
Del.quantity cm³/ : 11.0...15.0
1000 s: (8.5...17.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

: MAN #3-7103

Start-of-delivery mark is at start of
delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
 Edition : 21.09.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 548 027AA
 Injection pump
 Pump designation : PE8MW100/72CLS1173
 EP type number : 0 413 508 108
 Governor
 Governor design. : RQV300...1150MW99
 Governor no. : 0 420 083 163

Customer-spec. information
 Customer : KHD

Engine : F8L513

1st version kw : 163.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20
 : (3.05...3.25)

Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-
 4- 3

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150
 Rack travel in mm : 10.50...10.60
 Del. quantity cm³/ : 9.3...9.5
 100 s: (9.1...9.7)
 Spread cm³ : 0.3
 100 s: (0.6)

2nd speed rpm : 300.0
 Rack travel in mm : 4.9...5.1
 Del. quantity cm³/ : 1.1...1.5
 100 s: (0.8...1.7)
 Spread cm³ : 0.3
 100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1280
 travel mm : 11.10...11.50
 2nd speed rpm : 1190
 travel mm : 10.10...10.30
 3rd speed rpm : 400
 travel mm : 2.90...3.50
 4th speed rpm : 300
 travel mm : 2.20...2.60

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1200
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1150
 Del. quantity : 93.0...95.0
 1000 : (91.0...97.0)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 45...53

Setting point:
Speed rpm : 1200
Rack travel in mm : 16.5

Testing:
1st rack travel in: 9.50
Speed rpm : 1190...1200
2nd rack travel in: 3.50
Speed rpm : 1280...1310
4th rack travel in: 1370
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 13...21
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.0

Testing:
Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 300
Rack travel in mm : 4.90...5.10

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 10.50...10.60
2nd speed rpm : 650
Rack travel in m: 10.80...10.90
3rd speed rpm : 1000
Rack travel in m: 10.70...10.80

START CUT-OUT

Speed 1/min : 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 650
Del.quantity cm³/ : 91.5...94.5
1000 s: (89.0...97.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.50
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

806

Speed rpm : 100
Del.quantity cm³/ : 135.0...155.0
1000 s: (132.0...158.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.90...5.10
Del.quantity cm³/ : 11.0...15.0
1000 s: (8.5...17.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
 Edition : 21.09.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 548 027AB
 Injection pump
 Pump designation : PE8M~~W~~100/720LS1173
 EP type number : 0 413 508 108
 Governor
 Governor design. : RQV300...1150M~~W~~99
 Governor no. : 0 420 083 163

Customer-spec. information
 Customer : KHD

Engine : F8L513

1st version kW : 170.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20
 : (3.05...3.25)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-
 4- 3

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150
 Rack travel in mm : 10.60...10.70
 Del. quantity cm³/ : 9.4...9.6
 100 s: (9.2...9.8)
 Spread cm³ : 0.3
 100 s: (0.6)

2nd speed rpm : 300.0
 Rack travel in mm : 4.9...5.1
 Del. quantity cm³/ : 1.1...1.5
 100 s: (0.8...1.7)
 Spread cm³ : 0.3
 100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1280
 travel mm : 11.10...11.50
 2nd speed rpm : 1190
 travel mm : 10.10...10.30
 3rd speed rpm : 400
 travel mm : 2.90...3.50
 4th speed rpm : 300
 travel mm : 2.20...2.60

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1200
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1150
 Del. quantity : 94.0...96.0
 1000 : (92.0...98.0)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 45...53

Setting point:
Speed rpm : 1200
Rack travel in mm : 16.5

Testing:
1st rack travel in: 9.60
Speed rpm : 1190...1200
2nd rack travel in: 3.50
Speed rpm : 1280...1310
4th rack travel in: 1370
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 13...21
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.0

Testing:
Speed rpm : 100
Minimum rack trave: 6.50
Speed rpm : 300
Rack travel in mm : 4.90...5.10

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 10.60...10.70
2nd speed rpm : 650
Rack travel in m: 10.90...11.00
3rd speed rpm : 1000
Rack travel in m: 10.80...10.90

START CUT-OUT

Speed 1/min : 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 650
Del.quantity cm³/ : 92.5...95.5
1000 s: (90.0...98.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.60
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

B08

Speed rpm : 100
Del.quantity cm³/ : 135.0...155.0
1000 s: (132.0...158.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.90...5.10
Del.quantity cm³/ : 11.0...15.0
1000 s: (8.5...17.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
 Edition : 21.09.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 548 027AC
 Injection pump
 Pump designation : PE8MW100/720LS1173
 EP type number : 0 413 508 108
 Governor
 Governor design. : RQV300...1150MW99
 Governor no. : 0 420 083 163

Customer-spec. information
 Customer : KHD

Engine : F8L513

1st version kW : 178.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20
 : (3.05...3.25)

Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-
 4- 3

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 11.00...11.10

Del. quantity cm³/ : 9.9...10.1

100 s: (9.7...10.3)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 4.9...5.1

Del. quantity cm³/ : 1.1...1.5

100 s: (0.8...1.7)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1280
 travel mm : 11.10...11.50

2nd speed rpm : 1190
 travel mm : 10.10...10.30

3rd speed rpm : 400
 travel mm : 2.90...3.50

4th speed rpm : 300
 travel mm : 2.20...2.60

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1200

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del. quantity : 99.0...101.0

1000 : (97.0...103.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 45...53

Setting point:
Speed rpm : 1200
Rack travel in mm : 16.5

Testing:
1st rack travel in: 10.00
Speed rpm : 1190...1200
2nd rack travel in: 3.50
Speed rpm : 1285...1315
4th rack travel in: 1370
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 13...21
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.0

Testing:
Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 300
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 11.00...11.10
2nd speed rpm : 650
Rack travel in m: 11.30...11.40
3rd speed rpm : 1000
Rack travel in m: 11.20...11.30

START CUT-OUT

Speed 1/min : 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 650
Del.quantity cm³/ : 98.5...101.5
1000 s: (96.0...104.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.00
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...155.0
1000 s: (132.0...158.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.90...5.10
Del.quantity cm³/ : 11.0...15.0
1000 s: (8.5...17.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
 Edition : 21.09.92
 Replacer : -
 Test oil : ISO-4113
 Combination no. : 0 403 548 027AD
 Injection pump
 Pump designation : PE8M100/720LS1173
 EP type number : 0 413 508 108
 Governor
 Governor design. : RQV300...1150M99
 Governor no. : 0 420 083 163

Customer-spec. information
 Customer : KHD

Engine : F8L513

1st version kW : 174.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20
 : (3.05...3.25)

Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-
 4- 3

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150
 Rack travel in mm : 10.80...10.90
 Del. quantity cm³/ : 9.7...9.9
 100 s: (9.5...10.1)
 Spread cm³ : 0.3
 100 s: (0.6)

2nd speed rpm : 300.0
 Rack travel in mm : 4.9...5.1
 Del. quantity cm³/ : 1.1...1.5
 100 s: (0.8...1.7)
 Spread cm³ : 0.3
 100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1280
 travel mm : 11.10...11.50
 2nd speed rpm : 1190
 travel mm : 10.10...10.30
 3rd speed rpm : 400
 travel mm : 2.90...3.50
 4th speed rpm : 300
 travel mm : 2.20...2.60

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1200
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1150
 Del. quantity : 97.0...99.0
 1000 : (95.0...101.0)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 45...53

Setting point:
Speed rpm : 1200
Rack travel in mm : 16.5

Testing:
1st rack travel in: 9.80
Speed rpm : 1190...1200
2nd rack travel in: 3.50
Speed rpm : 1285...1315
4th rack travel in: 1370
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 13...21
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.0

Testing:
Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 300
Rack travel in mm : 4.90...5.10

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 10.80...10.90
2nd speed rpm : 650
Rack travel in m: 11.10...11.20
3rd speed rpm : 1000
Rack travel in m: 11.00...11.10

START CUT-OUT

Speed 1/min : 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 650
Del.quantity cm³/ : 96.5...99.5
1000 s : (94.0...102.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.80
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...155.0
1000 s : (132.0...158.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.90...5.10
Del.quantity cm³/ : 11.0...15.0
1000 s : (8.5...17.5)
Spread cm³ : 3.50
1000 s : (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
 Edition : 21.09.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 548 027AE
 Injection pump
 Pump designation : PE8MW100/720LS1175
 EP type number : 0 413 508 108
 Governor
 Governor design. : RQV300...1150MW99
 Governor no. : 0 420 083 163

Customer-spec. information
 Customer : KHD

Engine : F8L513

1st version kw : 188.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20
 : (3.05...3.25)

Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-
 4- 3

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 11.80...11.90

Del.quantity cm³/ : 11.2...11.4

100 s: (11.0...11.6)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 4.9...5.1

Del.quantity cm³/ : 1.1...1.5

100 s: (0.8...1.7)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1280

travel mm : 11.10...11.50

2nd speed rpm : 1190

travel mm : 10.10...10.30

3rd speed rpm : 400

travel mm : 2.90...3.50

4th speed rpm : 300

travel mm : 2.20...2.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1200

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 112.0...114.0

1000 : (110.0...116.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 45...53

Setting point:
Speed rpm : 1200
Rack travel in mm : 16.5

Testing:
1st rack travel in: 10.80
Speed rpm : 1190...1200
2nd rack travel in: 5.50
Speed rpm : 1290...1320
4th rack travel in: 1370
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 13...21
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.0

Testing:
Speed rpm : 100
Minimum rack trave: 6.50
Speed rpm : 300
Rack travel in mm : 4.90...5.10

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 11.80...11.90
2nd speed rpm : 650
Rack travel in m: 12.10...12.20
3rd speed rpm : 1000
Rack travel in m: 12.00...12.10

START CUT-OUT

Speed 1/min : 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 650
Del.quantity cm³/ : 110.5...113.5
1000 s: (108.0...116.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.80
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...155.0
1000 s: (132.0...158.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.90...5.10
Del.quantity cm³/ : 11.0...15.0
1000 s: (8.5...17.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
Edition : 21.09.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 548 027AF
Injection pump
Pump designation : PE8MW100/720LS1173
EP type number : 0 413 508 108
Governor
Governor design. : RQV300...1150MW99
Governor no. : 0 420 083 163

Customer-spec. information
Customer : KHD

Engine : F8L513

1st version kW : 168.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20
: (3.05...3.25)

Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-
4- 3

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 10.70...10.80

Del.quantity cm3/ : 9.6...9.8

100 s: (9.4...10.0)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 4.9...5.1

Del.quantity cm3/ : 1.1...1.5

100 s: (0.8...1.7)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1280
travel mm : 11.10...11.50

2nd speed rpm : 1190
travel mm : 10.10...10.30

3rd speed rpm : 400
travel mm : 2.90...3.50

4th speed rpm : 300
travel mm : 2.20...2.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1200

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 96.0...98.0

1000 : (94.0...100.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 45...53

Setting point:
Speed rpm : 1200
Rack travel in mm : 16.5

Testing:
1st rack travel in: 9.70
Speed rpm : 1190...1200
2nd rack travel in: 3.50
Speed rpm : 1280...1310
4th rack travel in: 1370
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 13...21
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.0

Testing:
Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 300
Rack travel in mm : 4.90...5.10

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 10.70...10.80
2nd speed rpm : 650
Rack travel in m: 11.00...11.10
3rd speed rpm : 1000
Rack travel in m: 10.90...11.00

START CUT-OUT

Speed 1/min : 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 650
Del.quantity cm³/ : 92.5...95.5
1000 s: (90.0...98.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.70
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...155.0
1000 s: (132.0...158.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.90...5.10
Del.quantity cm³/ : 11.0...15.0
1000 s: (8.5...17.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
 Edition : 21.09.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 548 032AD
 Injection pump
 Pump designation : PE8MW100/720LS1173
 EP type number : 0 413 508 108
 Governor
 Governor design. : RQ300/1150MW61-2
 Governor no. : 0 420 082 036

Customer-spec. information
 Customer : KHD

Engine : F8L513

1st version kW : 163.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20
 : (3.05...3.25)
 Rack travel in mm : 9.00...12.00

B17

Firing order : 1- 8- 7- 2- 6- 5-
 4- 3

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150
 Rack travel in mm : 10.30...10.40
 Del.quantity cm³/ : 8.9...9.1
 100 s: (8.7...9.3)
 Spread cm³ : 0.3
 100 s: (0.6)

2nd speed rpm : 300.0
 Rack travel in mm : 4.9...5.1
 Del.quantity cm³/ : 1.1...1.5
 100 s: (0.8...1.7)
 Spread cm³ : 0.3
 100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1270
 travel mm : 8.60...9.00
 2nd speed rpm : 1210
 travel mm : 6.60...6.80
 3rd speed rpm : 420
 travel mm : 3.50...4.10
 4th speed rpm : 300
 travel mm : 1.50...1.90

GUIDE SLEEVE POSITION

Control-lever position
 Degree: 107
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1150
 Del.quantity : 89.0...91.0
 1000 : (87.0...93.0)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 26...34

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 9.30
Speed rpm : 1190...1205
2nd rack travel in: 3.50
Speed rpm : 1235...1265
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 8...16
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.0

Testing:
Speed rpm : 100
Minimum rack trave: 6.50
Speed rpm : 300
Rack travel in mm : 4.90...5.10

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 10.30...10.40
2nd speed rpm : 650
Rack travel in m: 10.60...10.70
3rd speed rpm : 1000
Rack travel in m: 10.50...10.60

START CUT-OUT

Speed 1/min : 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 650
Del.quantity cm³/ : 82.5...85.5
1000 s: (80.0...88.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.30
Speed rpm : 1190...1205

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...155.0
1000 s: (132.0...158.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.90...5.10
Del.quantity cm³/ : 11.0...15.0
1000 s: (8.5...17.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
 Edition : 21.09.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 548 032AE
 Injection pump
 Pump designation : PE8MW100/720LS1173
 EP type number : 0 413 508 108
 Governor
 Governor design. : RQ300/1150MW61-2
 Governor no. : 0 420 082 036

Customer-spec. information
 Customer : KHD

Engine : F8L513

1st version kW : 188.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20
 : (3.05...3.25)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-
 4- 3

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150
 Rack travel in mm : 11.80...11.90
 Del.quantity cm³/ : 11.2...11.4
 100 s: (11.0...11.6)
 Spread cm³ : 0.3
 100 s: (0.6)
 2nd speed rpm : 300.0
 Rack travel in mm : 4.9...5.1
 Del.quantity cm³/ : 1.1...1.5
 100 s: (0.8...1.7)
 Spread cm³ : 0.3
 100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1270
 travel mm : 8.60...9.00
 2nd speed rpm : 1210
 travel mm : 6.60...6.80
 3rd speed rpm : 420
 travel mm : 3.50...4.10
 4th speed rpm : 300
 travel mm : 1.50...1.90

GUIDE SLEEVE POSITION

Control-lever position
 Degree: 107
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1150
 Del.quantity : 112.0...114.0
 1000 : (110.0...116.0)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 26...34

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 10.80
Speed rpm : 1190...1205
2nd rack travel in: 3.50
Speed rpm : 1245...1275
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 8...16
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.0

Testing:
Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 300
Rack travel in mm : 4.90...5.10

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 11.80...11.90
2nd speed rpm : 650
Rack travel in m: 12.10...12.20
3rd speed rpm : 1000
Rack travel in m: 12.00...12.10

START CUT-OUT

Speed 1/min : 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 650
Del. quantity cm³/ : 110.5...113.5
1000 s: (108.0...116.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.80
Speed rpm : 1190...1205

STARTING FUEL DELIVERY

B20

Speed rpm : 100
Del. quantity cm³/ : 135.0...155.0
1000 s: (132.0...158.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.90...5.10
Del. quantity cm³/ : 11.0...15.0
1000 s: (8.5...17.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
 Edition : 21.09.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 548 032AF
 Injection pump :
 Pump designation : PE8MW100/720LS1173
 EP type number : 0 413 508 108
 Governor
 Governor design. : RQ300/1150MW61-2
 Governor no. : 0 420 082 036

Customer-spec. information
 Customer : KHD

Engine : F8L513

1st version kW : 168.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20
 : (3.05...3.25)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-
 4- 3

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150
 Rack travel in mm : 10.70...10.80
 Del. quantity cm³/ : 9.6...9.8
 100 s : (9.4...10.0)
 Spread cm³ : 0.3
 100 s : (0.6)

2nd speed rpm : 300.0
 Rack travel in mm : 4.9...5.1
 Del. quantity cm³/ : 1.1...1.5
 100 s : (0.8...1.7)
 Spread cm³ : 0.3
 100 s : (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1270
 travel mm : 8.60...9.00
 2nd speed rpm : 1210
 travel mm : 6.60...6.80
 3rd speed rpm : 420
 travel mm : 3.50...4.10
 4th speed rpm : 300
 travel mm : 1.50...1.90

GUIDE SLEEVE POSITION

Control-lever position
 Degree: 107
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1150
 Del. quantity : 96.0...98.0
 1000 : (94.0...100.0)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 26...34

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 9.70
Speed rpm : 1190...1205
2nd rack travel in: 3.50
Speed rpm : 1240...1270
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 8...16
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.0

Testing:
Speed rpm : 100
Minimum rack trave: 6.50
Speed rpm : 300
Rack travel in mm : 4.90...5.10

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 10.70...10.80
2nd speed rpm : 650
Rack travel in m: 11.00...11.10
3rd speed rpm : 1000
Rack travel in m: 10.90...11.00

START CUT-OUT

Speed 1/min : 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 650
Del.quantity cm³/ : 92.5...95.5
1000 s: (90.0...98.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.70
Speed rpm : 1190...1205

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...155.0
1000 s: (132.0...158.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.90...5.10
Del.quantity cm³/ : 11.0...15.0
1000 s: (8.5...17.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
 Edition : 21.09.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 548 033AA
 Injection pump
 Pump designation : PE8MW100/720LS1173
 EP type number : 0 413 508 108
 Governor
 Governor design. : RQV450...1150MW70-1
 Governor no. : 0 420 083 179

Customer-spec. information
 Customer : KHD

Engine : F8L513

1st version kW : 178.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20
 : (3.05...3.25)

Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-
 4- 3

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150
 Rack travel in mm : 11.80...11.90
 Del. quantity cm³/ : 11.4...11.6
 100 s: (11.2...11.8)
 Spread cm³ : 0.3
 100 s: (0.6)

2nd speed rpm : 450.0
 Rack travel in mm : 4.6...4.8
 Del. quantity cm³/ : 1.1...1.5
 100 s: (0.8...1.7)
 Spread cm³ : 0.3
 100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1230
 travel mm : 9.50...9.90
 2nd speed rpm : 1190
 travel mm : 8.90...9.10
 3rd speed rpm : 650
 travel mm : 2.80...3.40
 4th speed rpm : 450
 travel mm : 1.20...1.60

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1150
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1150
 Del. quantity : 114.0...116.0
 1000 : (112.0...118.0)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 51...59

Setting point:
Speed rpm : 1150
Rack travel in mm : 16.5

Testing:
1st rack travel in: 10.80
Speed rpm : 1155...1165
2nd rack travel in: 4.00
Speed rpm : 1190...1220
4th rack travel in: 1320
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 14...22
Setting point w/out bumper spring
Speed rpm : 450
Rack travel in mm : 4.7

Testing:
Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 450
Rack travel in mm : 4.60...4.80

TORQUE CONTROL
Dimension a mm : 0.40
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 11.80...11.90
3rd speed rpm : 700
Rack travel in m: 11.70...12.00

START CUT-OUT

Speed 1/min : 370 (390)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.80
Speed rpm : 1155...1165

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 140.0...150.0
1000 s: (137.0...153.0)

LOW IDLE

Speed rpm : 450

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Rack travel in mm : 4.60...4.80
Del.quantity cm³/ : 11.0...15.0
1000 s: (8.5...17.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 13,4 F3
 Edition : 05.10.92
 Replaces : 03.90
 Test oil : ISO-4113
 Combination no. : 0 403 548 035
 Injection pump
 Pump designation : PE8MW100/720LS1173
 EP type number : 0 413 508 108
 Governor
 Governor design. : RQ300/1000MW104-1
 Governor no. : 0 420 082 041

Customer-spec. information
 Customer : KHD

Engine : F8L513

1st version kw : 150.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20
 : (3.05...3.25)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-
 4- 3

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000
 Rack travel in mm : 10.00...10.10
 Del. quantity cm³/ : 8.7...8.9
 100 s: (8.5...9.1)
 Spread cm³ : 0.3
 100 s: (0.6)

2nd speed rpm : 300.0
 Rack travel in mm : 4.9...5.1
 Del. quantity cm³/ : 1.1...1.5
 100 s: (0.8...1.7)
 Spread cm³ : 0.3
 100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1100
 travel mm : 8.80...9.20
 2nd speed rpm : 1060
 travel mm : 6.90...7.10
 3rd speed rpm : 450
 travel mm : 4.20...4.80
 4th speed rpm : 300
 travel mm : 1.30...1.70

GUIDE SLEEVE POSITION

Control-lever position
 Degree: 108
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1000
 Del. quantity : 87.0...89.0
 1000 : (85.0...91.0)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 89...97

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 9.00
Speed rpm : 1040...1055
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 69...77
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.0

Testing:
Speed rpm : 200
Minimum rack travel: 6.50
Speed rpm : 300
Rack travel in mm : 4.90...5.10

TORQUE CONTROL
Dimension a mm : 0.60
Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 10.00...10.10
2nd speed rpm : 700
Rack travel in m: 11.20...11.30
3rd speed rpm : 900
Rack travel in m: 10.40...10.70

START CUT-OUT

Speed 1/min : 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 700
Del.quantity cm³/ : 100.5...103.5
1000 s: (98.0...106.0)
Spread cm³ : 5.00
1000 s: (7.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.00

Speed rpm : 1040...1055

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...155.0
1000 s: (132.0...158.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.90...5.10
Del.quantity cm³/ : 11.0...15.0
1000 s: (8.5...17.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

Set warm starting fuel delivery
100...105 cm³ /1000 strokes at
n = 100 min⁻¹ at spool

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 5,7 q 15
 Edition : 27.11.92
 Replaces : 4.86
 Test oil : ISO-4113
 Combination no. : 9 400 085 283
 Injection pump
 Pump designation : PES6A90D410RS2293
 EP type number : 0 410 896 031
 Governor
 Governor design. : RSV350...1250AOB1150
 -3L
 Governor no. : 9 420 083 221
 Customer-spec. information
 Customer : MERCEDES-BENZ
 Engine : OM 352-A

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 419 992 198
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 0 681 343 009
 Opening
 pressure, bar : 172...175
 Test lines : 1 680 750 014
 Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 2.15...2.25
 : (2.10...2.30)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1250
 Rack travel in mm : 10.00...10.10
 Del. quantity cm³/ : 6.1...6.2
 100 s: (5.9...6.4)
 Spread cm³ : 0.3
 100 s: (0.4)
 2nd speed rpm : 350.0
 Rack travel in mm : 7.1...7.3
 Del. quantity cm³/ : 0.9...1.5
 100 s: (0.7...1.7)
 Spread cm³ : 0.2
 100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...1.00

Governor spring pre-tension
 Click setting x : 3.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1250
 Del. quantity : 61.5...62.5
 1000 : (59.5...64.5)
 Spread cm³ : 3.00
 1000 : (4.50)

RATED SPEED

1st version
 Control lever
 position degrees: 100...108

Testing:
 1st rack travel in: 9.00
 Speed rpm : 1290...1300
 2nd rack travel in: 4.00
 Speed rpm : 1335...1365
 4th rack travel in: 1450
 Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever

position degrees: 72...80
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.7

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 350
Rack travel in mm : 7.10...7.30
Rack travel in mm : 2.00
Speed rpm : 430...490

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 10.00...10.10
2nd speed rpm : 500
Rack travel in m: 10.00...10.20
5th speed rpm : 400
Rack travel in m: 11.20...11.80

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.00
Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 200
Rack travel in mm : 14.20...14.80

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 4,0 i
 Edition : 27.11.92
 Replaces : 12.91
 Test oil : ISO-4113
 Combination no. : 9 400 085 333
 Injection pump
 Pump designation : PES4A95D41ORS2805
 EP type number : 9 400 084 026
 Governor
 Governor design. : RQV300...1400AB1065-
 21L
 Governor no. : 9 420 080 303

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 364

1st version kW : 66.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400
 Rack travel in mm : 9.70...9.80
 Del. quantity cm³/ : 7.1...7.3
 100 s: (6.9...7.5)
 Spread cm³ : 0.3
 100 s: (0.3)

2nd speed rpm : 300.0
 Rack travel in mm : 7.4...7.6
 Del. quantity cm³/ : 0.5...1.1
 100 s: (0.3...1.3)
 Spread cm³ : 0.3
 100 s: (0.3)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1500
 travel mm : 8.50...8.60
 2nd speed rpm : 300
 travel mm : 0.80...1.30
 3rd speed rpm : 500
 travel mm : 2.30...2.80
 4th speed rpm : 750
 travel mm : 4.10...4.30

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1500
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1400
 Del. quantity : 71.0...73.0
 1000 : (69.0...75.0)
 Spread cm³ : 3.50
 1000 : (3.50)

RATED SPEED

1st version
Control lever
position degrees: 107...115

Testing:
1st rack travel in: 8.70
Speed rpm : 1460...1470
2nd rack travel in: 4.00
Speed rpm : 1540...1570
4th rack travel in: 1680
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 65...73

Testing:
Speed rpm : 100
Minimum rack trave: 7.50
Speed rpm : 300
Rack travel in mm : 7.40...7.60

CONSTANT REGULATION
Speed rpm : 480...630

START CUT-OUT

Speed 1/min : 250 (270)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 700
Del.quantity cm³/ : 55.0...58.0
1000 s: (52.5...60.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 8.70
Speed rpm : 1460...1470

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 78.0...90.0
1000 s: (75.0...93.0)
Rack travel in mm : 13.80...14.00

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM
 Edition : 23.10.92
 Replaces : 08.92
 Test oil : ISO-4113
 Combination no. : 9 400 085 348
 Injection pump
 Pump designation : PES6A95D410RS2812
 EP type number : 9 400 084 028
 Governor
 Governor design. : RSV350...900A7C627
 -3R
 Governor no. : 9 420 083 263

Customer-spec. information
 Customer : MWM

Engine : 6.10 TCA

1st version kW : 154.5
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.75...2.85
 : (2.70...2.90)

C03

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
 & maximum rack tra: 21.00
 Difference ° CS : 1.50...2.50

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 13.90...14.00

Del. quantity cm³/ : 13.6...13.8

100 s: (13.4...14.0)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.4...5.6

Del. quantity cm³/ : 1.5...1.9

100 s: (1.3...2.2)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Del. quantity : 136.5...138.5

1000 : (134.5...140.5)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 102...110

Testing:
1st rack travel in: 13.00
Speed rpm : 900...905
2nd rack travel in: 4.00
Speed rpm : 941...954
4th rack travel in: 1100
Speed rpm : 0.30...1.70

LOW IDLE 1
Control lever
position degrees: 71...79
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.0

Testing:
Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 350
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 365...425

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 13.90...14.00
2nd speed rpm : 550
Rack travel in m: 13.90...14.10
5th speed rpm : 400
Rack travel in m: 15.20...15.80

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.00
Speed rpm : 900...905

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.40...5.60
Del.quantity cm³/ : 15.5...19.5
1000 s: (13.0...22.0)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

CO4

APPLICATION

Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 23.10.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 085 350
 Injection pump
 Pump designation : FES6A95D41GRS2772
 EP type number : 9 400 084 018
 Governor
 Governor design. : RQV300...1300AB1066
 -12L
 Governor no. : 9 420 080 331

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 366 LA

1st version kW : 154.5
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.08)

BASIC SETTING

1st speed rpm : 1300
 Rack travel in mm : 11.10...11.20
 Del. quantity cm³/ : 9.8...10.0
 100 s : (9.6...10.2)
 Spread cm³ : 0.3
 100 s : (0.6)

2nd speed rpm : 300.0
 Rack travel in mm : 6.9...7.1
 Del. quantity cm³/ : 0.8...1.4
 100 s : (0.6...1.6)
 Spread cm³ : 0.3
 100 s : (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 0.80...1.30
 2nd speed rpm : 500
 travel mm : 2.30...2.80
 3rd speed rpm : 750
 travel mm : 4.10...4.30
 4th speed rpm : 1500
 travel mm : 8.50...8.60

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1500
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1300
 Aneroid pressure h: 700
 Del. quantity : 98.0...100.0
 1000 : (96.0...102.0)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 106...114

Testing:
1st rack travel in: 10.10
Speed rpm : 1360...1370
2nd rack travel in: 4.00
Speed rpm : 1490...1520
4th rack travel in: 1650
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 62...70

Testing:
Speed rpm : 100
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.90...7.10

CONSTANT REGULATION
Speed rpm : 420...550

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 11.10...11.20

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.60...8.90
2nd pressure hPa : 400
Rack travel in m: 10.30...10.40
3rd pressure hPa : 270
Rack travel in m: 9.00...9.30

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 700
Del. quantity cm³/ : 86.0...89.0
1000 s: (83.5...91.5)
Aneroid pressure h: -
Speed rpm : 500

Del. quantity cm³/ : 44.0...46.0
1000 s: (42.0...48.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.10
Speed rpm : 1360...1370

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 78.0...90.0
1000 s: (-)
Rack travel in mm : 13.60...13.80

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL
 Edition : 27.11.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 087 458
 Injection pump
 Pump designation : PE6P120A32ORS3186
 EP type number : 0 411 826 756
 Governor
 Governor design. : RQV250...1025PA657
 -29
 Governor no. : 9 420 080 312

Customer-spec. information
 Customer : VOLVO

Engine : TD102FS

1st version kw : 250.0
 Rated speed : 2050

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 019
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 067
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

c07

Prestroke mm : 2.60...2.70
 : (2.55...2.75)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 12.10...12.20
 Del. quantity cm³/ : 21.0...21.2
 100 s : (20.7...21.5)
 Spread cm³ : 0.5
 100 s : (0.9)

2nd speed rpm : 250.0
 Rack travel in mm : 3.9...4.1
 Del. quantity cm³/ : 1.6...2.1
 100 s : (1.3...2.3)
 Spread cm³ : 0.5
 100 s : (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 1.10...1.30
 2nd speed rpm : 500
 travel mm : 4.10...4.90
 3rd speed rpm : 700
 travel mm : 6.30...6.70
 4th speed rpm : 900
 travel mm : 6.30...6.70
 5th speed rpm : 1025
 travel mm : 7.30...7.80

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1080
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700

Aneroid pressure h: 1000
Del. quantity : 210.0...212.0
1000 : (207.0...215.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 114...122

Testing:
1st rack travel in: 11.10
Speed rpm : 1055...1065
2nd rack travel in: 4.00
Speed rpm : 1120...1150
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 61...69

Testing:
Speed rpm : 100
Minimum rack travel: 5.40
Speed rpm : 250
Rack travel in mm : 3.90...4.10

CONSTANT REGULATION

Speed rpm : 250...350

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 12.10...12.20

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.70...9.00
2nd pressure hPa : 75
Rack travel in m: 8.90...9.10 *
3rd pressure hPa : 425
Rack travel in m: 11.40...11.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 700

Del. quantity cm³/ : 146.0...148.0
1000 s: (143.0...151.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.10
Speed rpm : 1055...1065

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 250.0...290.0
1000 s: (246.0...294.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 3.90...4.10
Del. quantity cm³/ : 16.0...21.0
1000 s: (13.5...23.5)
Spread cm³ : 5.00
1000 s: (7.00)

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 27.11.92
 Replaces : 05.92
 Test oil : ISO-4113
 Combination no. : 9 400 087 464
 Injection pump
 Pump designation : PES6P120A72GLS7257
 EP type number : 9 400 087 081
 Governor
 Governor design. : RQV300...1050PA1029
 Governor no. : 9 420 080 325

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 447 LA

1st version kW : 257.6
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.60...4.70
 : (4.55...4.75)
 Rack travel in mm : 21.00...0.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.60...13.80

Del.quantity cm³/ : 25.8...26.0

100 s: (25.5...26.3)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.1...5.4

Del.quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1050

travel mm : 7.70...7.90

2nd speed rpm : 300

travel mm : 0.50...1.00

3rd speed rpm : 500

travel mm : 3.00...3.50

4th speed rpm : 700

travel mm : 5.20...5.70

5th speed rpm : 1165

travel mm : 9.20...9.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1120

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del.quantity : 258.0...260.0
1000 : (255.0...263.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:

1st rack travel in: 12.40
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 13.00
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 78...86

Testing:

Speed rpm : 100
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION

Speed rpm : 300...450

TORQUE CONTROL

Dimension a mm : 0.20
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 13.40...13.60
2nd speed rpm : 700
Rack travel in m: 13.60...13.80
3rd speed rpm : 850
Rack travel in m: 13.60...13.80
4th speed rpm : 950
Rack travel in m: 13.40...13.60

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 13.60...13.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.80...10.10
2nd pressure hPa : 250

Rack travel in m: 10.20...10.40
3rd pressure hPa : 700
Rack travel in m: 12.70...12.90

START CUT-OUT

Speed 1/min : 220 (2/0)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 1050
Del.quantity cm³/ : 244.5...247.5
1000 s: (241.5...250.5)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 124.0...126.0
1000 s: (121.0...129.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.40
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 250.0...270.0
1000 s: (246.0...274.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 27.11.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 087 466
 Injection pump
 Pump designation : PES6P120A720LS7257
 EP type number : 9 400 087 081
 Governor
 Governor design. : RQV300...1050PA1029
 -2
 Governor no. : 9 420 080 327

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 447 LA

1st version kw : 301.8
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.60...4.70
 : (4.55...4.75)
 Rack travel in mm : 21.00...0.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 15.00...15.20

Del. quantity cm³/ : 31.3...31.5

100 s: (31.0...31.8)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.1...5.4

Del. quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1050
 travel mm : 7.30...7.50

2nd speed rpm : 300
 travel mm : 0.50...1.00

3rd speed rpm : 500
 travel mm : 3.10...3.60

4th speed rpm : 700
 travel mm : 4.80...5.30

5th speed rpm : 1200
 travel mm : 9.20...9.70

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1500
Del.quantity : 313.5...315.5
1000 : (310.5...318.5)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 14.00
Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1180...1210
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 78...86

Testing:
Speed rpm : 100
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION
Speed rpm : 275...425

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1500
Rack travel mm : 15.00...15.20

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.70...11.00
2nd pressure hPa : 250
Rack travel in m: 11.10...11.30
3rd pressure hPa : 800
Rack travel in m: 14.00...14.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1500
Speed rpm : 1050
Del.quantity cm3/ : 301.5...304.5
1000 s: (298.5...307.5)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 143.0...145.0
1000 s: (140.0...148.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 14.00
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 297.0...317.0
1000 s: (295.0...321.0)

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL
 Edition : 27.11.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 087 470
 Injection pump
 Pump designation : PE6P110A320RS3080-1
 EP type number : 0 411 816 734
 Governor
 Governor design. : RQV250...1025PA919-1
 Governor no. : 9 420 080 334

Customer-spec. information
 Customer : VOLVO

Engine : TD 102 T

1st version kW : 227.0
 Rated speed : 2050

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10
 : (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 13.20...13.30

Del. quantity cm³/ : 18.0...18.3

100 s: (17.7...18.5)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 6.1...6.3

Del. quantity cm³/ : 3.7...4.2

100 s: (3.4...4.5)

Spread cm³ : 0.3

100 s: (0.6)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1100
 travel mm : 8.30...8.50

2nd speed rpm : 250
 travel mm : 0.40...0.90

3rd speed rpm : 550
 travel mm : 4.40...4.90

4th speed rpm : 800
 travel mm : 6.30...6.70

5th speed rpm : 1180
 travel mm : 9.60...10.10

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1110

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 650

Aneroid pressure h: 1000

Del. quantity : 180.0...183.0

1000 : (177.5...185.5)

Spread cm³ : 4.00
1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 12.20
Speed rpm : 1035...1095
2nd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 61...69

Testing:
Speed rpm : 100
Minimum rack travel: 7.00
Speed rpm : 250
Rack travel in mm : 6.10...6.30

CONSTANT REGULATION
Speed rpm : 300...440

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 13.20...13.30

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.40...10.60
2nd pressure hPa : 360
Rack travel in m: 11.20...11.30
3rd pressure hPa : 600
Rack travel in m: 12.40...12.60

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 1000
Del.quantity cm³/ : 168.5...174.5
1000 s: (166.5...176.5)
Aneroid pressure h: -
Speed rpm : 700

Del.quantity cm³/ : 128.5...131.5
1000 s: (126.0...134.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.20
Speed rpm : 1085...1095

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 150.0...200.0
1000 s: (146.0...204.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 6.10...6.30
Del.quantity cm³/ : 37.5...42.5
1000 s: (34.5...45.5)
Spread cm³ : 3.00
1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL
 Edition : 27.11.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 087 471
 Injection pump
 Pump designation : PE6P120A32ORS3178
 EP type number : 0 411 826 752
 Governor
 Governor design. : RQV250...950PA921-3
 Governor no. : 0 421 813 786

Customer-spec. information
 Customer : VOLVO-TRUCK

Engine : TD 122 F

1st version kW : 261.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70
 : (3.55...3.75)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.00...13.10

Del. quantity cm³/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.6...4.8

Del. quantity cm³/ : 1.7...2.2

100 s: (1.4...2.5)

Spread cm³ : 0.5

100 s: (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 1.00...1.40

2nd speed rpm : 450
 travel mm : 3.60...4.20

3rd speed rpm : 700
 travel mm : 6.30...6.70

4th speed rpm : 985
 travel mm : 8.10...8.30

5th speed rpm : 1060
 travel mm : 9.40...9.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1030

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del. quantity : 229.0...231.0
1000 : (226.0...234.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:

1st rack travel in: 12.00
Speed rpm : 980...990
2nd rack travel in: 4.00
Speed rpm : 1060...1090
4th rack travel in: 12.00
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 60...68

Testing:

Speed rpm : 100
Minimum rack travel: 6.20
Speed rpm : 250
Rack travel in mm : 4.60...4.80

CONSTANT REGULATION

Speed rpm : 250...380

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.00...13.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.00...10.20
2nd pressure hPa : 90
Rack travel in m: 10.20...10.30 *
3rd pressure hPa : 600
Rack travel in m: 12.50...12.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 700
Del. quantity cm³/ : 163.0...165.0
1000 s: (160.0...168.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.00
Speed rpm : 980...990

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 270.0...310.0
1000 s: (266.0...314.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.60...4.80
Del. quantity cm³/ : 17.5...22.5
1000 s: (14.5...25.5)
Spread cm³ : 5.00
1000 s: (7.00)

Remarks:

:
Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL
 Edition : 27.11.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 087 473
 Injection pump
 Pump designation : PE6P12DA32ORS3178-1
 EP type number : 0 411 826 764
 Governor
 Governor design. : RQV250...950PA921-13
 Governor no. : 0 421 813 796

Customer-spec. information
 Customer : VOLVO-TRUCK

Engine : TD 122 FR

1st version kW : 300.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70
 : (3.55...3.75)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.20...14.30

Del. quantity cm³/ : 25.9...26.1

100 s: (25.6...26.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.8...5.1

Del. quantity cm³/ : 1.7...2.2

100 s: (1.4...2.5)

Spread cm³ : 0.5

100 s: (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 1.00...1.40

2nd speed rpm : 450
 travel mm : 3.60...4.20

3rd speed rpm : 700
 travel mm : 6.40...6.60

4th speed rpm : 985
 travel mm : 8.20...8.40

5th speed rpm : 1060
 travel mm : 9.60...10.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1000

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del. quantity : 259.0...261.0
1000 : (256.0...264.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:

1st rack travel in: 13.20
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1090...1120
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 61...69

Testing:

Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 250
Rack travel in mm : 4.80...5.10

CONSTANT REGULATION

Speed rpm : 250...380

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 14.20...14.30

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.00...10.20
2nd pressure hPa : 120
Rack travel in m: 10.40...10.50
3rd pressure hPa : 875
Rack travel in m: 13.80...14.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 700
Del. quantity cm³/ : 163.0...165.0
1000 s: (160.0...168.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack : 13.20
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 270.0...310.0
1000 s: (266.0...314.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.80...5.10
Del. quantity cm³/ : 17.5...22.5
1000 s: (14.5...25.5)
Spread cm³ : 5.00
1000 s: (7.00)

Remarks:

:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE
 Edition : 23.10.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 230 072
 Injection pump
 Pump designation : PES6A100D41ORS2676
 EP type number : 9 410 230 023
 Governor
 Governor design. : RSV400...1100A2C2086
 -1L
 Governor no. : 9 420 234 161

Customer-spec. information
 Customer : JOHN DEERE

Engine : 6466T

1st version kW : 132.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 32...34

Prestroke mm : 2.45...2.55
 : (2.40...2.60)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.30...10.40

Del. quantity cm³/ : 11.0...11.2

100 s: (10.8...11.4)

Spread cm³ : 0.4

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.2...5.4

Del. quantity cm³/ : 1.3...1.7

100 s: (1.0...1.9)

Spread cm³ : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 700

Del. quantity : 110.0...112.0

1000 : (108.0...114.0)

Spread cm³ : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 48...56

Testing:

1st rack travel in: 9.30

Speed rpm : 1145...1155

2nd rack travel in: 4.00
Speed rpm : 1205...1215
3rd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 24...32
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 4.8

Testing:
Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.20...5.40

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 10.30...10.40
2nd speed rpm : 750
Rack travel in m: 11.70...11.90

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 11.70...11.90

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.30...9.50
2nd pressure hPa : 215
Rack travel in m: 11.30...11.40
3rd pressure hPa : 65
Rack travel in m: 9.90...10.30

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 750
Del.quantity cm³/ : 126.0...130.0
1000 s: (124.0...132.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 87.0...91.0
1000 s: (85.0...93.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.30
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 190.0...210.0
1000 s: (185.0...215.0)

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.20...5.40
Del.quantity cm³/ : 13.0...17.0
1000 s: (10.5...19.5)
Spread cm³ : 6.00
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE18160

Adjustment without torque-control
spring retainer with 1 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Start-of-delivery mark = 15.5° after
start of delivery cyl. 1.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VMA
Edition : 03.12.92
replaces : -
Calibrating oil : ISO-4113
Injection pump : VE3/10F1500L483
Type number : 0 460 403 016
Customer Part-No. :

Customer-specific information
Customer : VM

Engine : HR 394 H
Power KW: 39

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 127.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1200
Setting value mm: 2.50...2.90
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1200
Setting value bar: 5.30...5.90
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Dispersion cm3/: 3.5
1000S.: (3.5)

Full-load del. w/out charge press.:

Speed 1/min: 1200
Del. quantity cm3/
1000S.: 44.00...45.00

Shutoff
electromagnet Volt: 12.0
Dispersion cm3/: 3.5
1000S.: (3.5)

Low-idle speed regulation

Speed 1/min: 460
Del. quantity cm3/
1000S.: 10.50...14.50

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 3.5
1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 1620
Del. quantity cm3/
1000S.: 21.00...27.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 60.00...100.00
mind 1000S.: 60.00

Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1200
Inj.-qty. cm3/
difference 1000S.: 15.00...17.00 #

Shutoff
electromagnet Volt: 12
SP press.-dif.measurement
pompa di mandata (FP)
1.Speed 1/min: 1200

Supply pump
pressure
difference bar: 0.10...0.30 #
Shutoff
electromagnet Volt: 12.0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1500
TD travel mm: 3.60...4.40
mm: (3.30...4.70)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1200
TD travel mm: 2.50...2.90
mm: (2.00...3.40)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 1000
TD travel mm: 1.30...2.10
mm: (1.00...2.40)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

2nd speed 1/min: 600
Supply-pump
pressure bar: 2.80...3.40
Shutoff

electromagnet Volt: 12
3rd speed 1/min: 1200
Supply-pump
pressure bar: 5.30...5.90
Shutoff

electromagnet Volt: 12
4th speed 1/min: 1500
Supply-pump
pressure bar: 6.60...7.20
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 600
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)

2nd speed 1/min: 1500
Shutoff
electromagnet Volt: 12
Overflow : 55.50...138.80
quantity cm³/10s: (40.50...153.80)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1700
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

5th speed 1/min: 1620
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 21.00...27.00
1000S.: (18.00...30.00)

8th speed 1/min: 1550
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 37.00...47.00
1000S.: (36.00...48.00)

9th speed 1/min: 1500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 43.50...46.50
1000S.: (42.00...48.00)

12th speed 1/min: 1200
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 44.00...45.00
1000S.: (42.00...47.00)

20th speed 1/min: 600
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 45.50...48.50
1000S.: (44.00...50.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 400
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)
Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 460
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 10.50...14.50
1000S.: (8.50...16.50)

Dispersion cm³/: 3.5
1000S.: (3.5)
2nd speed 1/min: 650

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

3rd speed 1/min: 550
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 2.00...8.00
1000S.: (1.00...9.00)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1200
Inj.-qty. cm³/ : 18.0...26.0 '
difference 1000S.: -
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1200
TD-travel : 0.80...1.00 '
difference mm: -
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 200
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 65.00...95.00
1000S.: (65.00...95.00)

2nd speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.00...55.00
1000S.: (35.00...55.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 60.00...100.00
1000S.: (60.00...100.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 5.8...6.2
MS mm: 0.6...1.0
SVS max. mm: 2.8
Ya mm: 38.2 ±2
Yb mm: 55.5 ±4.1

Remarks:

:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : OPE
 Edition : 03.12.92
 replaces : 09.07.92
 Calibrating oil : ISO-4113
 Injection pump : VE4/10F2100L297-1
 Type number : 0 460 404 056
 Customer Part-No. :

Customer-specific information
 Customer : OPEL

Engine : 2,3 YDT

Power KW: 74

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
 return temp. °C
 with thermometer : 40.00...48.00
 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 000

Opening
 Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Start of delivery
 Prestroke mm: -
 (from BDC): -

Indicator setting
 Piston stroke mm: 1.0
 Outlet : 0

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000

C24

Charge press. hPa: 1000
 Setting value mm: 2.70...3.10
 AFB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1000
 Charge press hPa: 1000
 Setting value bar: 4.20...4.80
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1200
 Charge press. hPa: 1000
 Del. quantity cm³/
 1000S.: 62.50...63.50

KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Dispersion cm³/: 3.0
 1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 500
 Del. quantity cm³/
 1000S.: 40.50...41.50

KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 290
 Del. quantity cm³/
 1000S.: 13.50...17.50

KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 3.0
 1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2500
 Charge press hPa: 1000
 Del. quantity cm³/
 1000S.: 15.00...21.00

KSB/AFB
 valve Volt: 12

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 57,0...59,0
mind 1000S.: -

KSB/AFB
valve Volt: 12.0
Shutoff
electromagnet Volt: 12.0

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1000
Charge press hPa: -
Inj.-qty. cm³/
difference 1000S.: + 22.0...24.0 #

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1000

TD-travel
difference mm: + 1.2...1.4 #

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2100
Charge press hPa: 1000
TD travel mm: 8.30...9.10
mm: (8.00...9.40)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

3rd speed 1/min: 1000
Charge press hPa: 1000
TD travel mm: 2.70...3.10
mm: (2.20...3.60)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

4th speed 1/min: 800
Charge press hPa: 1000
TD travel mm: 1.30...2.10
mm: (1.00...2.40)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
5th speed 1/min: 1500
Charge press. hPa: 1000
TD travel mm: 5.50...6.10
mm: (5.10...6.50)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
9th speed 1/min: 300
Charge press. hPa: 1000
TD travel mm: 1.50...3.50 A
mm: (1.30...3.70)

KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12
10th speed 1/min: 800
Charge press. hPa: 1000
TD travel mm: 3.60...6.00 B
mm: (3.00...6.60)

KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 2100
Charge press. hPa: 1000
Supply-pump
pressure bar: 6.90...7.50

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

2nd speed 1/min: 1000
Charge press. hPa: 1000
Supply-pump
pressure bar: 4.20...4.80

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

3rd speed 1/min: 800
Charge press. hPa: 1000
Supply-pump
pressure bar: 3.70...4.30

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

4th speed 1/min: 300
Charge press. hPa: 1000
Supply-pump
pressure bar: 4.20...4.80

KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 41.70...83.40
(26.70...98.40)
2nd speed 1/min: 2150
Charge press. hPa: 1000
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 55.60...139.00
(40.60...154.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 800*
Charge-air pressure-setting
point hPa: 500
LDA-stroke mm: 6.5
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 55.50...56.50
(53.00...59.00)
2nd speed 1/min: 2700
Charge press. hPa: 1000
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 0.00...1.50
-
5th speed 1/min: 2500
Charge press. hPa: 1000
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 15.00...21.00
(14.00...22.00)
8th speed 1/min: 2300
Charge press. hPa: 1000
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Del. quantity cm³/1000s.: 35.00...43.00
(33.00...45.00)

9th speed 1/min: 2150
Charge press. hPa: 1000

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 49.80...52.20
(48.70...53.30)

12th speed 1/min: 1200
Charge press. hPa: 1000

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 62.50...63.50
(60.70...65.30)

16th speed 1/min: 800
Charge press. hPa: 1000

KSB solenoid-operated
valve volt: 12
Shutoff
electromagnet volt: 12
Del. quantity cm³/1000s.: 60.5...63.5

17th speed 1/min: 800
Charge press. hPa: -

KSB solenoid-operated
valve volt: 12.0
Shutoff
electromagnet volt: 12.0
Del. quantity cm³/1000H.: 40.5...43.5
-

18th speed 1/min: 500

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 40.50...41.50
(38.70...43.30)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 290
Del. quantity cm³/1000s.: 0.00...3.00
-

Shutoff
electromagnet volt: -
KSB/AFB
valve Volt: -

Idle delivery:

1st speed 1/min: 290
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 13.50...17.50
 1000s.: (11.50...19.50)
 Dispersion cm³/: 3.0
 1000s.: (3.0)
 2nd speed 1/min: 380
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...3.00
 1000s.: (0.00...3.00)
 3rd speed 1/min: 320
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 7.00...13.00
 1000s.: (6.50...13.50)

Load-dependent start of delivery:
 Inj.-qty.dif.measurement:

1st speed 1/min: 1000
 Charge press. hPa: -
 Inj.-qty. cm³/ : + 22,0..24,0#
 difference 1000s.: (20.0...26.0) #
 KSB/AFB
 valve Volt: 12.0
 Shutoff
 electromagnet Volt: 12.0
 2nd speed 1/min: 1000
 Charge press. hPa: -
 Inj.-qty. cm³/ : + 2.0...8.0 '
 difference 1000s.: -
 KSB/AFB
 valve Volt: 12.0
 Shutoff
 electromagnet Volt: 12.0

TD-travel dif.measurement:
 correttore anticipo iniezione (SV):
 1st speed 1/min: 1000
 TD-travel : + 1.2...1.4 #
 difference mm: -
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1000
 TD-travel : + 0.5...1.1 '

Automatic starting fuel delivery:

1st speed 1/min: 250
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 53.00...63.00
 1000s.: (50.00...66.00)

2nd speed 1/min: 400
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 40.00...50.00
 1000s.: (40.00...50.00)

3rd speed 1/min: 100
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 57.00...59.00
 1000s.: (50.00...66.00)

Shutoff electromagnet:

Cut-in
 min voltage : 10.0
 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
 K mm: 3.2...3.4
 KF mm: 5.6...6.0
 MS mm: 0.8...1.2
 LDA stroke mm: 6.5
 Ya mm: 37.9...39.9
 Yb mm: 39.2...44.8

Remarks:
 :
 :

* Correction at adjusting nut (46)

A = KSB adjustment point
 B = KSB curve point

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : S0F
Edition : 07.12.92
replaces : 14.04.92
Calibrating oil : ISO-4113

Injection pump : VE4/10F2050R364
Type number : 0 460 404 066
Customer Part-No. :

Customer-specific information
Customer : SOFIM

Engine : 8140.67.2580

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: 0.2
(from BDC): +0,02(0,04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Setting value mm: 3.10...3.50
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1000
Setting value bar: 4.50...5.10
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 2000
Del. quantity cm³/
1000S.: 37.50...38.50

Shutoff
electromagnet Volt: 12
Dispersion cm³/: 3.0
1000S.: (3.0)

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm³/
1000S.: 15.00...19.00

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 3.0
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2200
Del. quantity cm³/
1000S.: 14.00...21.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 70.00...100.00
mind 1000S.: 70.00

Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1000
Inj.-qty. cm³/
difference 1000S.: 18.50...19.50 #

Shutoff
electromagnet Volt: 12
SP press.-dif.measurement
pompa di mandata (FP)

1.Speed 1/min: 1000
Supply pump
pressure
difference bar: 0.10...0.30 #
Shutoff
electromagnet Volt: 12.0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1800
TD travel mm: 7.30...8.10
mm: (7.00...8.40)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1000
TD travel mm: 3.10...3.50
mm: (2.60...4.00)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 600
TD travel mm: 0.80...1.60
mm: (0.50...1.90)

Shutoff
electromagnet Volt: 12
5th speed 1/min: 2000
TD travel mm: 8.20...9.00
mm: (7.90...9.30)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 2000
Supply-pump
pressure bar: 7.00...7.60
Shutoff

electromagnet Volt: 12
2nd speed 1/min: 1000
Supply-pump
pressure bar: 4.50...5.10
Shutoff

electromagnet Volt: 12
3rd speed 1/min: 500
Supply-pump
pressure bar: 3.50...4.10
Shutoff

electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)

2nd speed 1/min: 2000
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

3rd speed 1/min: 2330

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

5th speed 1/min: 2200
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 14.00...20.00
1000S.: (13.00...21.00)

8th speed 1/min: 2000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 37.50...38.50
1000S.: (36.00...40.00)

12th speed 1/min: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.5...38.5
1000S.: (34.5...39.5)

15th speed 1/min: 600
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 33.00...36.00
1000S.: (32.00...37.00)

17th speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 30.00...37.00
1000H.: (29.50...37.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 375
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet Volt: -

Idle delivery:

1st speed 1/min: 375
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 15.00...19.00
1000S.: (12.00...22.00)

Dispersion cm³/: 3.0
1000S.: (3.0)

2nd speed 1/min: 465
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...2.00
1000S.: (0.00...2.00)

3rd speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 8.00...14.00
1000S.: (6.00...16.00)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1000
Inj.-qty. cm³/ : 19.0...21.0 #
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1000
Inj.-qty. cm³/ : 18.0...24.0 '
difference 1000S.: (17.0...25.0) '
Shutoff
electromagnet Volt: 12
4th speed 1/min: 1000
Inj.-qty. cm³/ : + 4.0...6.0 ''
difference 1000S.: -
Shutoff
electromagnet Volt: 12.0

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1000
TD-travel : 0.40...0.60 '
difference mm: -
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1000
TD-travel : 0.8...1.8 ''
Shutoff
electromagnet Volt: 12.0

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1000
Supply pump-
pressure : 0.10...0.30 #
difference bar: -
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/ : 48.00...68.00
1000S.: (48.00...68.00)

2nd speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/ : 27.00...37.00
1000S.: (27.00...37.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/ : 70.00...100.00
1000S.: (70.00...100.00)

Shutoff electromagnet:

D02

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: -
KF mm: 5.6...6.0
MS mm: 1.6...2.0
SVS max. mm: 1.9
Ya mm: 37.9...39.9
Yb mm: 40.9...46.5

Remarks:

:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VMA
Edition : 03.12.92
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/10F2100L414
Type number : 0 460 404 068
Customer Part-No. :

Customer-specific information
Customer : VM

Engine : HR 425 CLI

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 45.00...46.00
Electronically : -

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Charge press. hPa: 1000
Setting value mm: 1.40...1.80
Shutoff
electromagnet Volt: 12

Supply-pump pressure

D03

Speed 1/min: 1000
Charge press hPa: 1000
Setting value bar: 4.20...4.80
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 1000
Del. quantity cm³/
1000S.: 65.50...66.50

Shutoff
electromagnet Volt: 12
Dispersion cm³/: 3.0
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 700
Del. quantity cm³/
1000S.: 43.00...44.00

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 450
Del. quantity cm³/
1000S.: 13.00...17.00

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 3.0
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2300
Charge press hPa: 1000
Del. quantity cm³/
1000S.: 40.00...46.00

Shutoff
electromagnet Volt: 12.0

Start:

Speed 1/min: 100
Del. quantity cm³/: 45.00...75.00
mind 1000S.: 45.00

Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1500
Charge press hPa: 1000
Inj.-qty. cm³/
difference 1000S.: 25.0...27.0 #

Shutoff
electromagnet Volt: 12.0
SP press.-dif.measurement
pompa di mandata (FP)
1.Speed 1/min: 1500
Charge press hPa: 1000
Supply pump
pressure
difference bar: 0.10...0.30 #
Shutoff
electromagnet Volt: 12.0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1500
Charge press hPa: 1000
TD travel mm: 3.40...4.20
mm: (3.10...4.50)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1000
Charge press hPa: 1000
TD travel mm: 1.40...1.80
mm: (0.90...2.30)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 700
Charge press hPa: 1000
TD travel mm: 0.20...1.00
mm: (0.00...1.30)

Shutoff
electromagnet Volt: 12
5th speed 1/min: 2100
Charge press. hPa: 1000
TD travel mm: 6.10...6.90
mm: (5.80...7.20)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 2100
Charge press. hPa: 1000
Supply-pump
pressure bar: 7.20...7.80

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1000
Charge press. hPa: 1000
Supply-pump
pressure bar: 4.20...4.80

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 700
Charge press. hPa: 1000
Supply-pump
pressure bar: 3.20...3.80

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 700
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)
2nd speed 1/min: 2100
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 700*
Charge-air pressure-setting
point hPa: 350
LDA-stroke mm: 7.1

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 55.50...56.50
1000s.: (53.50...58.50)

3rd speed 1/min: 2500
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...8.00
1000s.: (0.00...8.00)

5th speed 1/min: 2300
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 40.00...46.00
1000s.: (39.00...47.00)

9th speed 1/min: 2100
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 63.00...66.00
1000s.: (61.50...67.50)

12th speed 1/min: 1500
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 12
Del. quynntity cm³/: 65.50...66.50
1000s.: (64.0...68.0)

18th speed 1/min: 700
Charge press. hPa: -

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 43.00...44.00
1000s.: (41.00...46.00)

20th speed 1/min: 700

Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 65.50...68.50
1000S.: (64.00...70.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 450
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 13.00...17.00
1000S.: (10.00...20.00)

Dispersion cm³/: 3.0
1000S.: (3.0)

2nd speed 1/min: 600
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...5.00
1000S.: (0.00...5.00)

3rd speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 2.50...7.50
1000S.: (2.00...8.00)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

2nd speed 1/min: 1500
Charge press. hPa: 1000
Inj.-qty. cm³/: 25.0...27.0 #
difference 1000S.: -

Shutoff
electromagnet Volt: 12
4th speed 1/min: 1500
Charge press. hPa: 1000
Inj.-qty. cm³/: 28.0...34.0 '
difference 1000S.: -

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1500
Charge press. hPa: 1000
TD-travel : 0.50...0.70 '
difference mm: -
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement:
pompa di mandata (FP):

1st speed 1/min: 1500
Supply pump-
pressure : 0.10...0.30 #
difference bar: -
Shutoff
electromagnet Volt: 12.0

Part-load del.at 3rd inj.-qty.
terza fermo della portata
stop (EGR set)
scarico) (ARF)
gaz d'échappement-ARF)
Spacing mm: 12.0

1st speed 1/min: 1000
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 42.50...44.50
1000S.: (41.00...46.00)

Automatic starting fuel delivery:

1st speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 45.00...75.00
1000S.: (45.00...75.00)

2nd speed 1/min: 550
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 25.00...45.00
1000S.: (25.00...45.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 45.00...75.00
1000S.: (45.00...75.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3,2...3,4
KF mm: 5,2...5,6
MS mm: 0,6...1,0
LDA stroke mm: 7,1
Ya mm: 38.8...40.8
Yb mm: 37.2...46.8

Ajustement Potentiometer:

Supply voltage
pot. volt: 5.0
Output volt
pot. volt: 2.31

Remarks:

⋮

* Correction at adjusting nut (46)

Operate control lever after each
manifold-pressure compensator pressure
change.



BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : OPE
Edition : 03.12.92
replaces : 18.02.91
Calibrating oil : ISO-4113
Injection pump : VE4/10F2100L297-4
Type number : 0 460 404 071
Customer Part-No. :

Customer-specific information
Customer : OPEL

Engine : 2,3 DTR-MT

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
Charge press. hPa: 1000
Setting value mm: 5.10...5.50
AFB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

D07

Supply-pump pressure

Speed 1/min: 1500
Charge press hPa: 1000
Setting value bar: 5.40...6.00
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1200
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 62.50...63.50
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 3.0
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm3/
1000S.: 40.50...41.50
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

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Low-idle speed regulation

Speed 1/min: 290
Del. quantity cm3/
1000S.: 13.50...17.50
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 3.0
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2500
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 15.00...21.00
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100

Charge press hPa: -
Del. quantity cm³/: 57.0...59.0
mind 1000S.: 57.0

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1500
Charge press hPa: -
Inj.-qty. cm³/
difference 1000S.: - 6.0...8.0 #
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement
pompa di mandata (FP)

1.Speed 1/min: 1500
Charge press hPa: -
Supply pump
pressure
difference bar: - 0.1...0.3 #

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2100
Charge press hPa: 1000
TD travel mm: 7.80...8.60
mm: (7.50...8.90)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

3rd speed 1/min: 1500
Charge press hPa: 1000
TD travel mm: 5.10...5.50
mm: (4.60...6.00)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

4th speed 1/min: 800
Charge press hPa: 1000
TD travel mm: 1.10...1.90
mm: (0.80...2.20)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

5th speed 1/min: 1200
Charge press. hPa: 1000
TD travel mm: 3.50...4.10
mm: (3.10...4.50)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

9th speed 1/min: 300
Charge press. hPa: 1000
TD travel mm: 1.50...3.50 A
mm: (1.30...3.70)

KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12

10th speed 1/min: 800
Charge press hPa: 1000
TD travel mm: 3.50...5.90 B
mm: (2.90...6.50)

KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 2100
Charge press. hPa: 1000
Supply-pump
pressure bar: 6.90...7.50

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

2nd speed 1/min: 1500
Charge press. hPa: 1000
Supply-pump
pressure bar: 5.40...6.00

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

3rd speed 1/min: 1200
Charge press. hPa: 1000
Supply-pump
pressure bar: 4.60...5.20

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

4th speed 1/min: 300
Charge press. hPa: 1000
Supply-pump
pressure bar: 4.20...4.80

KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)
2nd speed 1/min: 2150
Charge press. hPa: 1000
KSB/AFB
valve Volt: 120
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 800*
Charge-air pressure-setting
point hPa: 500
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 55.50...56.50
1000S.: (53.00...59.00)
2nd speed 1/min: 2700
Charge press. hPa: 1000
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)
5th speed 1/min: 2500
Charge press. hPa: 1000
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 15.00...21.00
1000S.: (14.00...22.00)
8th speed 1/min: 2300
Charge press. hPa: 1000
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 34.00...44.00
1000S.: -
9th speed 1/min: 2150
Charge press. hPa: 1000
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 50.30...52.70
1000S.: (49.20...53.80)
12th speed 1/min: 1200
Charge press. hPa: 1000
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 62.50...63.50
1000S.: (60.70...65.30)
16th speed 1/min: 800
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12
Shutoff
electromagnet volt: 12
Del. quantity cm³/: 60.5...63.50
1000H.: -
17th speed 1/min: 800
Charge press. hPa: -
KSB solenoid-operated
valve volt: 12
Shutoff
electromagnet volt: 12
Del. quantity cm³/: 40.5...43.5
1000H.: -
18th speed 1/min: 500
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 40.50...41.50
1000S.: (38.70...43.30)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 290
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 290
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 13.50...17.50
1000S.: (11.50...19.50)
Dispersion cm³/: 3.0
1000S.: (3.0)
2nd speed 1/min: 380
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)
3rd speed 1/min: 320
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 7.00...13.00
1000S.: (6.50...13.50)
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1500
Inj.-qty. cm³/ : - 6.0...8.0 #
difference 1000S.: -
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1500
Inj.-qty. cm³/ : - 10.0...18,0'
difference 1000S.: -
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1500
TD-travel : - 0.2...0.4 #
difference mm: -
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1500
Supply pump-
pressure : - 0.1...0.3 '
difference bar: -
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 250
KSB/AFB
valve Volt: 12
Timing valve Volt: 12

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 55.00...65.00
1000S.: (55.00...65.00)

2nd speed 1/min: 400
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 40.00...50.00
1000S.: (40.00...50.00)

3rd speed 1/min: 100
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 57.00...59.00
1000S.: (50.00...66.00)

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 5.6...6.0
MS mm: 0.9...1.3
LDA stroke mm: 6.5
Ya mm: 20.5...22.5
Yb mm: 59.9...73.9

Remarks:

:
:
:

* Correction at adjusting nut (46)

Operate control lever after each
manifold-pressure compensator pressure
change.

A = KSB adjustment point
B = KSB curve point

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN
Edition : 08.12.92
replaces : -
Calibrating oil : ISO-4113
Injection pump : VE4/10F1350R418-1
Type number : 0 460 404 072
Customer Part-No. :

Customer-specific information
Customer : MAN

Engine : D 0824 GF 02

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 109

Opening
Pressure bar: 207.00...210.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.55
(from BDC): +0.02(0.04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Setting value mm: 2.70...3.10
Shutoff
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1000
Setting value bar: 5.30...5.90
Shutoff
electromagnet Volt: 24

Full-load del. w/out charge press.:

Speed 1/min: 1000
Del. quantity cm3/
1000S.: 78.5...79.5
Shutoff
electromagnet Volt: 24
Dispersion cm3/
1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 300
Del. quantity cm3/
1000S.: 7.00...13.00
Shutoff
electromagnet Volt: 24
Del. quantity cm3/
1000S.: (6.5)

Full-load speed regulation

Speed 1/min: 1420
Del. quantity cm3/
1000S.: 59.50...65.50
Shutoff
electromagnet Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm3/
mind 1000S.: 40.00
Shutoff
electromagnet Volt: 24

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1200
TD travel mm: 4.70...5.50
mm: (4.40...5.80)

Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1000
TD travel mm: 2.70...3.10
mm: (2.20...3.60)

Shutoff
electromagnet Volt: 24
4th speed 1/min: 800

TD travel mm: 0.30...1.10
 mm: (0.00...1.40)

Shutoff
 electromagnet Volt: 24

5th speed 1/min: 1350

TD travel mm: 5.30...6.10
 mm: (5.30...6.10)

Shutoff
 electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 600

Supply-pump pressure bar: 3.10...3.70

Shutoff
 electromagnet Volt: 24

2nd speed 1/min: 1000

Supply-pump pressure bar: 5.30...5.90

Shutoff
 electromagnet Volt: 24

3rd speed 1/min: 1350

Supply-pump pressure bar: 7.50...8.10

Shutoff
 electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 600

Shutoff
 electromagnet Volt: 24

Overflow quantity cm³/10s: 41.70...83.40
 (26.70...98.40)

2nd speed 1/min: 1350

Shutoff
 electromagnet Volt: 24

Overflow quantity cm³/10s: 55.60...139.00
 (40.60...154.00)

Delivery-quant. and breakaway char.:

3rd speed 1/min: 1530

Shutoff
 electromagnet Volt: 24

Del. quantity cm³/: 0.00...15.00
 1000S.: (0.00...15.00)

4th speed 1/min: 1480

Shutoff
 electromagnet Volt: 24

Del. quantity cm³/: 15.00...45.00
 1000S.: -

5th speed 1/min: 1420

Shutoff
 electromagnet Volt: 24

Del. quantity cm³/: 59.50...65.50
 1000S.: (58.00...67.00)

9th speed 1/min: 1350

Shutoff
 electromagnet Volt: 24

Del. quantity cm³/: 78.50...81.50
 1000S.: (77.00...83.00)

12th speed 1/min: 1000

Shutoff
 electromagnet Volt: 24

Del. quynity cm³/: 78.50...79.50
 1000S.: (76.50...81.5)

15th speed 1/min: 800

Shutoff
 electromagnet Volt: 24

Del. quantity cm³/: 74.00...80.00
 1000S.: (73.00...81.00)

20th speed 1/min: 600

Shutoff
 electromagnet Volt: 24

Del. quantity cm³/: 53.00...59.00
 1000S.: (52.00...60.00)

Mech. shutoff:
 Mech. Abststellung:

1st speed 1/min: 1300

Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

Shutoff
 electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 300

Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

Shutoff
 electromagnet volt: -

Idle delivery:

1st speed 1/min: 300

Shutoff
 electromagnet Volt: 24

Del. quantity cm³/: 7.00...13.00
 1000S.: (5.00...15.00)

Dispersion cm³/: 6.0
 1000S.: (6.5)

2nd speed 1/min: 450

Shutoff
 electromagnet Volt: 24

Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 350

Shutoff
 electromagnet Volt: 24

Del. quantity cm³/: 55.00...105.00
 1000S.: (55.00...105.00)

2nd speed 1/min: 500
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 40.00...70.00
1000s.: (40.00...70.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 40.00...80.00
1000s.: (40.00...80.00)

Shutoff electromagnet:

Cut-in
min voltage : 20.0
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: 5.3...5.7
MS	mm: -
SVS max.	mm: 3.7

Remarks:

:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VMA
Edition : 03.12.92
replaces : 10.03.92
Calibrating oil : ISO-4113
Injection pump : VE4/10F2100L414-1
Type number : 0 460 404 073
Customer Part-No. :

Customer-specific information
Customer : VM

Engine : HR 425 CLIRS

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Charge press. hPa: 1000
Setting value mm: 1.20...1.60
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1000
Charge press hPa: 1000
Setting value bar: 4.70...5.30
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 65.00...66.00

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 3.0
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 700
Del. quantity cm3/
1000S.: 43.00...44.00

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 450
Del. quantity cm3/
1000S.: 13.00...17.00

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 3.0
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2300
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 40.00...46.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 45.00...75.00
mind 1000S.: 45.00

Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1500
Charge press hPa: 12
Inj.-qty. cm3/
difference 1000S.: - 7.00...9.00 #

Shutoff
electromagnet Volt: 12
SP press.-dif.measurement
pompa di mandata (FP)
1.Speed 1/min: 1500
Supply pump
pressure
difference bar: -0.10..0.30 #
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2100
Charge press hPa: 1000
TD travel mm: 7.50...8.30
mm: (7.20...8.60)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1000
Charge press hPa: 1000
TD travel mm: 1.20...1.60
mm: (0.70...2.10)

Shutoff
electromagnet Volt: 12
6th speed 1/min: 1500
Charge press. hPa: 1000
TD travel mm: 4.00...4.80
mm: (3.70...5.10)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 2100
Charge press. hPa: 1000
Supply-pump
pressure bar: 7.60...8.20

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1000
Charge press. hPa: 1000
Supply-pump
pressure bar: 4.70...5.30

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 700
Charge press. hPa: 1000
Supply-pump
pressure bar: 3.80...4.40

Shutoff
electromagnet Volt: 12

Overlow quantity at overflow valve:

1st speed 1/min: 700
Charge press. hPa: 1000

D15

Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)
2nd speed 1/min: 2100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 700*
Charge-air pressure-setting
point hPa: 350
LDA-stroke mm: 7.0
Shutoff
electromagnet Volt: 12
Del. quantity cm³/:
1000S.: (52.00...57.00)

3rd speed 1/min: 2500
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 12
Del. quantity cm³/:
1000S.: (0.00...8.00)

5th speed 1/min: 2300
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 12
Del. quantity cm³/:
1000S.: (39.00...47.00)

9th speed 1/min: 2100
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 12
Del. quantity cm³/:
1000S.: (60.00...66.00)

12th speed 1/min: 1500
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 12
Del. quynity cm³/:
1000S.: (63.50...67.50)

18th speed 1/min: 700
Charge press. hPa: -

Shutoff
electromagnet Volt: 12
Del. quantity cm³/:
1000S.: (41.00...46.00)

20th speed 1/min: 700
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 12
Del. quantity cm³/:
1000S.: (63.50...69.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 450
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 13.00...17.00
1000S.: (10.00...20.00)

Dispersion cm³/: 3.0
1000S.: (3.0)

2nd speed 1/min: 600
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...5.00
1000S.: (0.00...5.00)

3rd speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 1.50...6.50
1000S.: (1.00...7.00)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1500
Inj.-qty. cm³/ : - 13.0..19.0'
difference 1000S.: -
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1500
TD-travel : - 1.4...1.6 '
difference mm: -
Shutoff
electromagnet Volt: 12

Part-load del.at 3rd inj.-qty.
terza fermo della portata
stop (EGR set)
scarico) (ARF)
gaz d'échappement-ARF)
Spacing mm: 12.0

1st speed 1/min: 1000
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 42.50...44.50
1000S.: (41.00...46.00)

Automatic starting fuel delivery:

1st speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 45.00...75.00
1000S.: (45.00...75.00)

2nd speed 1/min: 550
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 25.00...45.00
1000S.: (25.00...45.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 45.00...75.00
1000S.: (45.00...75.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 5.2...5.6
MS mm: 0.6...1.0
SVS max. mm: 4.3
LDA stroke mm: 7.0

Adjustment Potentiometer:

Supply voltage
pot. volt: 5.0
Output volt
pot. volt: 2.31

Remarks:

⋮
⋮
* Correction at adjusting nut (46)

Operate control lever after each
manifold-pressure compensator pressure
change.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN
Edition : 03.12.92
replaces : 09.12.92
Calibrating oil : ISO-4113
Injection pump : VE4/10F1350R418-2
Type number : 0 460 404 076
Customer Part-No. :

Customer-specific information
Customer : MAN

Engine : D 0824 GF 03

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 109

Opening
Pressure bar: 207.00...210.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.2
(from BDC): ±0.02(0.04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Setting value mm: 2.20...2.60
Shutoff
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1000
Setting value bar: 6.40...7.00
Shutoff
electromagnet Volt: 24

Full-load del. w/out charge press.:

Speed 1/min: 1000
Del. quantity cm3/
1000S.: 78.00...79.00
Shutoff
electromagnet Volt: 24
Dispersion cm3/
1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 300
Del. quantity cm3/
1000S.: 7.00...13.00
Shutoff
electromagnet Volt: 24
Del. quantity cm3/
1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 1420
Del. quantity cm3/
1000S.: 58.00...62.00
Shutoff
electromagnet Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm3/
mind 1000S.: 57.0
Shutoff
electromagnet Volt: 24

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1200
TD travel mm: 4.30...5.10
mm: (4.00...5.40)

Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1000
TD travel mm: 2.20...2.60
mm: (1.70...3.10)

Shutoff
electromagnet Volt: 24
4th speed 1/min: 900

TD travel mm: 1.00...1.80
mm: (0.70...2.10)

Shutoff
electromagnet Volt: 24
5th speed 1/min: 1350
TD travel mm: 6.00...6.80
mm: -

Shutoff
electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 600
Supply-pump pressure bar: 4.40...5.00
Shutoff
electromagnet Volt: 24
2nd speed 1/min: 1000
Supply-pump pressure bar: 6.40...7.00
Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1200
Supply-pump pressure bar: 7.40...8.00
Shutoff
electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 600
Shutoff
electromagnet Volt: 24
Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)
2nd speed 1/min: 1350
Shutoff
electromagnet Volt: 24
Overflow : 55.60...139.00
quantity cm³/10s: (55.60...139.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1550
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)
3rd speed 1/min: 1510
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...15.00
1000S.: (0.00...15.00)
4th speed 1/min: 1460
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 15.00...45.00
1000S.: (15.00...45.00)
5th speed 1/min: 1420

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 58.00...62.00
1000S.: (53.50...66.50)
9th speed 1/min: 1350
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 77.70...80.70
1000S.: (76.20...82.20)
12th speed 1/min: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 78.00...79.00
1000S.: (76.00...81.00)
15th speed 1/min: 800
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 79.00...83.00
1000S.: (77.50...84.50)
20th speed 1/min: 600
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 65.00...71.00
1000S.: (64.00...72.00)

Mech. shutoff:
Mech. Abst. lling:

1st speed 1/min: 1350
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)
Shutoff
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 300
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)
Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 300
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 7.00...13.00
1000S.: (4.50...15.50)
Dispersion cm³/: 3.5
1000S.: (3.5)
2nd speed 1/min: 450
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 350

Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 65.00...105.00
1000S.: (65.00...105.00)

2nd speed 1/min: 450
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 40.00...70.00
1000S.: (40.00...70.00)

3rd speed 1/min: 100
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 54.00...66.00
1000S.: MAX.57.0

Shutoff electromagnet:

Cut-in
min voltage : 20.0
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation
K mm: -
KF mm: 5.0...5.4
MS mm: 0.8

Remarks:
:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA
Edition : 09.12.92
replaces : 14.04.92
Calibrating oil : ISO-4113

Injection pump : VE4/12F1350R407
Type number : 0 460 424 075
Customer Part-No. :

Customer-specific information
Customer : IVECO-FIAT

Engine : 8040.25.4000 TC

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Charge press. hPa: 1000
Setting value mm: 1.40...1.80

Shutoff
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1000
Charge press hPa: 1000
Setting value bar: 5.70...6.30
Shutoff
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 700
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 79.00...80.00

Shutoff
electromagnet Volt: 24
Dispersion cm3/
1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 600
Del. quantity cm3/
1000S.: 45.50...46.50

Shutoff
electromagnet Volt: 24

Low-idle speed regulation

Speed 1/min: 350
Del. quantity cm3/
1000S.: 13.00...17.00

Shutoff
electromagnet Volt: 24
Del. quantity cm3/: 3.5
1000S.: (5.0)

Full-load speed regulation

Speed 1/min: 1525
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 30.00...36.00

Shutoff
electromagnet Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm3/: 60.00...110.00
mind 1000S.: 60.00

Shutoff
electromagnet Volt: 24

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100
Charge press hPa: 1000
TD travel mm: 2.20...3.00
mm: (1.70...3.50)

Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1000
Charge press hPa: 1000
TD travel mm: 1.40...1.80
mm: (0.70...2.50)

5th speed 1/min: 1350
Charge press. hPa: 1000
TD travel mm: 3.70...4.50
mm: (3.20...5.00)

Shutoff
electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 600
Charge press. hPa: 1000
Supply-pump pressure bar: 3.70...4.30
Shutoff

electromagnet Volt: 24
2nd speed 1/min: 1000
Charge press. hPa: 1000
Supply-pump pressure bar: 5.70...6.30
Shutoff

electromagnet Volt: 24
3rd speed 1/min: 1350
Charge press. hPa: 1000
Supply-pump pressure bar: 7.50...8.10
Shutoff

electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 600
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Overflow quantity cm³/10s: 41.70...83.40
(26.70...98.40)

2nd speed 1/min: 1350
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Overflow quantity cm³/10s: 55.60...139.00
(40.60...154.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 600*

Charge-air pressure-setting point hPa: 375

LDA-stroke mm: 6,7

Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000s.: 64.00...65.00
(60.50...68.50)

2nd speed 1/min: 1600
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000s.: 0.00...3.00
(0.00...3.00)

5th speed 1/min: 1525
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000s.: 30.00...36.00
(27.00...39.00)

8th speed 1/min: 1475
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000s.: 43.00...51.00
(41.00...53.00)

9th speed 1/min: 1350
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000s.: 69.50...72.50
(67.50...74.50)

10th speed 1/min: 1200
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000s.: 72.00...76.00
(70.50...77.50)

12th speed 1/min: 700
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000s.: 79.00...80.00
(76.00...83.00)

18th speed 1/min: 600
Charge press. hPa: -

Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000s.: 45.50...46.50
(42.50...49.50)

20th speed 1/min: 600
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 24
Del. quantity cm³/1000s.: 82.50...86.50
(81.00...88.00)

21th speed 1/min: 500
Charge press. hPa: -

Shutoff
electromagnet Volt: 24

Del. quantity cm³/: 44.00...48.00
1000S.: (42.00...50.00)

Mech. shutoff:
Mech. Abst \ddot{u} llung:

1st speed 1/min: 1350
Charge press. hPa: 1000
Del. quantity cm³/: 0.00...3.00
1000S.: -

Shutoff
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 350
Del. quantity cm³/: 0.00...3.00
1000S.: -

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 350
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 13.00...17.00
1000S.: (10.00...20.00)

Dispersion cm³/: 3.5
1000S.: (5.0)

2nd speed 1/min: 475
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 60.00...110.00
1000S.: (60.00...110.00)

2nd speed 1/min: 250
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 45.00...65.00
1000S.: (45.00...65.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 60.00...110.00
1000S.: (60.00...110.00)

Shutoff electromagnet:

Cut-in
min voltage : 20.0

Rated voltage : 24.0

Mounting and assembly dimensions:

Designation

K mm: 3,7
KF mm: K-OT
MS mm: 0,7...1,1
LDA stroke mm: 6,7

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN
 Edition : 09.12.92
 replaces : 09.11.88
 Calibrating oil : ISO 4113

Injection pump : VE6/12F1300R307
 Type number : 0 460 426 112

Customer-specific information
 Customer : MAN

Engine : D0826TF

TEST BENCH REQUIREMENTS

Calibrating-oil
 return temp. °C
 with thermometer : 40.00...48.00
 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 020

Opening
 Pressure bar: 172...175

Perforated-plate
 diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Start of delivery
 Prestroke mm: 0.2
 (from BDC): ±0.02(0.04)

Indicator setting
 Piston stroke mm: 1.0
 Outlet : A

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
 Charge press. hPa: 1000
 Setting value mm: 2.8...3.2

Supply-pump pressure

Speed 1/min: 1000
 Charge press hPa: 1000
 Setting value bar: 8.1...8.7

Full-load del. with charge press.:

Speed 1/min: 1000
 Charge press. hPa: 1000
 Del. quantity cm3/
 1000S.: 120.5...121.5
 Dispersion cm3/: 4.0
 1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 600
 Del. quantity cm3/
 1000S.: 88.5...89.5

Low-idle speed regulation

Speed 1/min: 300
 Del. quantity cm3/
 1000S.: 26.0...34.0
 Del. quantity cm3/: 3.5
 1000S.: (4.5)

Full-load speed regulation

Speed 1/min: 1350
 Charge press hPa: 1000
 Del. quantity cm3/
 1000S.: 107.0...113.0

Start:

Speed 1/min: 100
 Charge press hPa: -
 Del. quantity cm3/: -
 mind 1000S.: 70.0

Load-dependent start of delivery:
 Inj.-qty.dif.measurement:

Speed 1/min: 1000
 Charge press hPa: 1000
 Inj.-qty. cm3/
 difference 1000S.: - 11.0...13.0 #
 SP press.-dif.measurement
 pompa di mandata (FP) #

1.Speed 1/min: 1000
 Charge press hPa: 1000
 Supply pump
 pressure
 difference bar: - 0.1...0.3 #

Inspection-pump test specifications

Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000
Charge press hPa: 1000
TD travel mm: 2.8...3.2
mm: (2.3...3.7)
2nd speed 1/min: 1100
Charge press hPa: 1000
TD travel mm: 3.5...4.3
mm: (3.2...4.6)
3rd speed 1/min: 900
Charge press hPa: 1000
TD travel mm: 1.5...2.3
mm: (1.2...2.6)

Supply-pump pressure characteristic:

1st speed 1/min: 600
Charge press. hPa: 1000
Supply-pump pressure bar: 5.8...6.4
2nd speed 1/min: 1000
Charge press. hPa: 1000
Supply-pump pressure bar: 8.1...8.7
3rd speed 1/min: 1100
Charge press. hPa: 1000
Supply-pump pressure bar: 8.5...9.1

Overflow quantity at overflow valve:

1st speed 1/min: 600
Charge press. hPa: -
Overflow quantity cm³/10s: 41...83
(26...98)
2nd speed 1/min: 1300
Charge press. hPa: 1000
Overflow quantity cm³/10s: 55...138
(40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 600*
Charge-air pressure-setting point hPa: 300
LDA-stroke mm: 7.6
Del. quantity cm³/1000S.: 104.5...105.5
(102.5...107.5)
2nd speed 1/min: 1520
Charge press. hPa: 1000
Del. quantity cm³/1000S.: 0.00...3.0
-
3rd speed 1/min: 1480
Charge press. hPa: 1000
Del. quantity cm³/1000S.: 0.00...15.0
-

4th speed 1/min: 1430
Charge press. hPa: 1000
Del. quantity cm³/1000S.: 15.0...55.00
-
5th speed 1/min: 1350
Charge press. hPa: 1000
Del. quantity cm³/1000S.: 107.0...113.0
(105.5...114.5)
6th speed 1/min: 1300
Charge press. hPa: 1000
Del. quantity cm³/1000S.: 116.5...121.5
(115.0...123.0)
7th speed 1/min: 1000
Charge press. hPa: 1000
Del. quantity cm³/1000S.: 120.5...121.5
(118.5...123.5)
8th speed 1/min: 800
Charge press. hPa: 1000
Del. quantity cm³/1000S.: 120.5...125.5
(119.0...127.0)
9th speed 1/min: 600
Charge press. hPa: 1000
Del. quantity cm³/1000S.: 118.5...127.6
(117.0...129.0)
10th speed 1/min: 600
Charge press. hPa: -
Del. quantity cm³/1000S.: 88.5...89.5
(86.5...91.5)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1300
Charge press. hPa: 1000
Del. quantity cm³/1000S.: 0.00...3.00
-

Idle delivery:

1st speed 1/min: 300
Del. quantity cm³/1000S.: 26.5...33.5
(24.5...35.5)
2nd speed 1/min: 400
Del. quantity cm³/1000S.: 0.00...3.00
-
3rd speed 1/min: 350
Del. quantity cm³/1000S.: 3.00...12.00
(1.50...13.5)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1000
Charge press. hPa: 1000
Inj.-qty. cm³/difference 1000S.: - 39.5...47.5
-
2nd speed 1/min: 1000
Charge press. hPa: 1000
Inj.-qty. cm³/difference 1000S.: + 2.0...8.0
-

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1000
Charge press. hPa: 1000
TD-travel : - 0.8...1.0 '
difference mm: -
2nd speed 1/min: 1000
Charge press. hPa: 1000
TD-travel : + 0.1...0.9 ''
difference mm: -

Automatic starting fuel delivery:

1st speed 1/min: 100
Del. quantity cm³/: 70.00...130.00
1000S.: -

2nd speed 1/min: 350
Del. quantity cm³/: 55.00...95.00
1000S.: -

3rd speed 1/min: 450
Del. quantity cm³/: 95.0...135.0
1000S.: -

Mounting and assembly dimensions:

Designation

K mm: -
MS mm: 0.6...1.0
SVS max. mm: 0.6
LDA stroke mm: 7.6

Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : REN
Edition : 03.12.92
replaces : -
Calibrating oil : ISO-4113
Injection pump : VE4/8F2300R458
Type number : 0 460 484 048
Customer Part-No. :

Customer-specific information
Customer : RENAULT

Engine : F8Q - 730

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 3.20...3.60
AFB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Setting value bar: 4.40...5.00
KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1250
Del. quantity cm3/
1000S.: 31.6...32.6

KSB/AFB 11
valve Volt: -
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2,5
1000S.: (3,0)

Low-idle speed regulation

Speed 1/min: 410
Del. quantity cm3/
1000S.: 7.5...11.5

KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 2,5
1000S.: (2,5)

Residual-Delivery Setting

Speed 1/min: 500
Del. quantity cm3/
1000S.: 1.00...5.00

KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2450
Del. quantity cm3/
1000S.: 25.50...31.50

KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 40.00...70.00
mind 1000S.: 40.00
KSB/AFB
Valve Volt: -

Shutoff
 electromagnet Volt: 12

Load-dependent start of delivery:
 Inj.-qty.dif.measurement:

Speed 1/min: 1250
 Inj.-qty. cm³/
 difference 1000s.: -10.5...12.5 #
 KSB/AFB
 valve Volt: -
 Shutoff
 electromagnet Volt: 12
 SP press.-dif.measurement
 pompa di mandata (FP)
 1.Speed 1/min: 1250
 Supply pump
 pressure
 difference bar: - 0.1...0.3 #
 KSB/AFB
 valve Volt: -
 Shutoff
 electromagnet Volt: 12

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000
 TD travel mm: 5.80...6.60
 mm: (5.50...6.90)
 KSB/AFB
 valve Volt: -
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1250
 TD travel mm: 3.20...3.60
 mm: (2.70...4.10)
 KSB/AFB
 valve Volt: -
 Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 750
 TD travel mm: 1.10...1.90
 mm: (0.80...2.20)
 KSB/AFB
 valve Volt: -
 Shutoff
 electromagnet Volt: 12
 8th speed 1/min: 310
 TD travel mm: 1.00...3.20 A
 mm: -
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 9th speed 1/min: 500
 TD travel mm: 2.20...4.60 B
 mm: -

KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 750
 Supply-pump
 pressure bar: 3.10...3.70
 KSB/AFB
 valve Volt: -
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1250
 Supply-pump
 pressure bar: 4.40...5.00
 KSB/AFB
 valve Volt: -
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 2000
 Supply-pump
 pressure bar: 6.30...6.90
 KSB/AFB
 valve Volt: -
 Shutoff
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 750
 KSB/AFB
 valve Volt: -
 Shutoff
 electromagnet Volt: 12
 Overflow : 41.70...83.40
 quantity cm³/10s: (26.70...98.40)
 2nd speed 1/min: 2250
 KSB/AFB
 valve Volt: -
 Shutoff
 electromagnet Volt: 12
 Overflow : 55.60...139.00
 quantity cm³/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2950
 KSB/AFB
 valve Volt: -
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³: 0.00...5.00
 1000s.: (0.00...5.00)
 3rd speed 1/min: 2650
 KSB/AFB
 valve Volt: -

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 10.50...18.50
1000S.: (9.50...19.50)
5th speed 1/min: 2450
KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 25.50...31.50
1000S.: (24.50...32.50)
9th speed 1/min: 2250
KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 33.00...35.00
1000S.: (31.70...36.30)
10th speed 1/min: 2000
KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 32.50...34.50
1000S.: (31.20...35.30)
11th speed 1/min: 1625
KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 30.10...33.10
1000S.: (29.30...33.90)
12th speed 1/min: 1250
KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 31.60...32.60
1000S.: (29.80...34.40)
20th speed 1/min: 750
KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 30.20...33.20
1000S.: (29.40...34.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 410
Del. quantity cm³/: 0.00...3.00
1000S.: MAX.5.0 STREU.

Shutoff
electromagnet volt: -
KSB/AFB
valve Volt: -

Damper set qty.:

LFG-setting:
solidale con carcassa:
Idle delivery:

1st speed 1/min: 410
KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 7.50...11.50
1000S.: (5.50...13.50)

High Idle:

1st speed 1/mi: 500
KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 7.00...11.00
1000S.: (5.00...13.00)

Residual:

1.Rotacao 1/min: 500
KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 1.00...5.00
1000S.: (1.00...5.00)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1250
Inj.-qty. cm³/ : - 13.2..17.2'
difference 1000S.: -
KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
Inj.-qty. cm³/: + 2.00..8.00"
difference 1000S.: -
KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1250
TD-travel : - 0.4...0.6 '
difference mm: -
KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12

2nd speed 1/min: 1250
TD-travel : - 0.2...0.8 "
difference mm: -
KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 210
KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 40.00...70.00
1000S.: (40.00...70.00)

2nd speed 1/min: 310
KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 15.00...45.00
1000S.: (15.00...45.00)

4th speed 1/min: 100
KSB/AFB
valve Volt: -
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 40.00...70.00
1000S.: (40.00...70.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 5.5
MS mm: 1.2...1.4
SVS max. mm: 1.5

Remarks:

:
:

A = KSB adjustment point
B = KSB curve point

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA 1,9 K2
Edition : 09.12.92
replaces : 06.12.91
Calibrating oil : ISO 4113

Injection pump : VE4/8F2300R464
Type number : 0 460 484 052

Customer-specific information
Customer : FIAT TIPO/TEMPRA

Engine : M 705

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
Setting value mm: 5,9...6,3
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1500
Setting value bar: 5,6...6,2

Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1500
Del. quantity cm³/
1000S.: 32.00...33.00

Shutoff
electromagnet Volt: 12
Dispersion cm³/: 2,5
1000S.: -

Low-idle speed regulation

Speed 1/min: 450
Del. quantity cm³/
1000S.: 8,0...12,0

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 2,5
1000S.: -

Full-load speed regulation

Speed 1/min: 2500
Del. quantity cm³/
1000S.: 20,0...26,0

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: -
mind 1000S.: 37,0

Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1500
Inj.-qty. cm³/
difference 1000S.: - 6,0...8.00 #

Shutoff
electromagnet Volt: 12
SP press.-dif.measurement
pompa di mandata (FP)

1.Speed 1/min: 1500
Supply pump
pressure
difference bar: - 0.1...0.3 #

Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 800
 TD travel mm: 1,7...2,5
 mm: (1,4...2,8)
 electromagnet Volt: 12
 2nd speed 1/min: 1500
 TD travel mm: 5,9...6,3
 mm: (5,4...6,8)
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 2000
 TD travel mm: 8,6...9,4
 mm: (8,3...9,7)
 Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 2300
 TD travel mm: 9,4...10,2
 mm: (9,1...10,5)
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 600
 Supply-pump pressure bar: 3,0...3,6
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1500
 Supply-pump pressure bar: 5,6...6,2
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 2300
 Supply-pump pressure bar: 7,8...8,4
 Shutoff
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 600
 Shutoff
 electromagnet Volt: 12
 Overflow quantity cm³/10s: 41,6...83,3
 (26,6...98,3)
 2nd speed 1/min: 2300
 Shutoff
 electromagnet Volt: 12
 Overflow quantity cm³/10s: 55,5...138,8
 (40,5...153,8)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2800
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0,0...1,6
 1000S.: -

2nd speed 1/min: 2650
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 2,0...10,0
 1000S.: -
 3rd speed 1/min: 2500
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 20,0...26,0
 1000S.: (19,0...27,0)
 4th speed 1/min: 2300
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 32,8...35,2
 1000S.: (31,7...36,3)
 5th speed 1/min: 2000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 32,3...34,7
 1000S.: (31,2...35,8)
 6th speed 1/min: 1500
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 32,0...33,0
 1000S.: (30,2...34,8)
 7th speed 1/min: 600
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 33,0...36,0
 1000S.: (31,5...37,5)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 390
 Del. quantity cm³/: 0,0...3,0
 1000S.: -
 Shutoff
 electromagnet volt: -

Idle delivery:

1st speed 1/min: 450
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 8,0...12,0
 1000S.: (5,0...15,0)
 2nd speed 1/min: 650
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0,0...3,0
 1000S.: -

Load-dependent start of delivery:
 Inj.-qty.dif.measurement:

1st speed 1/min: 1500
 Inj.-qty. cm³/ : - 5,0...13,0'
 difference 1000S.: -

Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1500
TD-travel : - 1.0...1.2 '
difference mm: -

Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 300
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 40,0...60,00
1000S.: -

2nd speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 33,00...43,00
1000S.: -

Shutoff electromagnet:

Cut-in
min voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm: 3,2...3,4
KF	mm: 5,3...5,7
MS	mm: 1,3...1,7
XK	mm: 17,0...19,0
XL	mm: 10,5...13,9

Remarks:

Overflow restriction 0.55 mm - Part No.
..303

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : OPE
Edition : 03.12.92
replaces : -
Calibrating oil : ISO-4113
Injection pump : VE4/9F2300R487
Type number : 0 450 494 330
Customer Part-No. :

Customer-specific information
Customer : OPEL

Engine : 1,7 YD mit EGR

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 638 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Setting value mm: 2.00...2.40
AFB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1000
Setting value bar: 4.00...4.60
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Dispersion cm3/: 2.5
1000S.: (2.5)

Full-load del. w/out charge press.:

Speed 1/min: 1300
Del. quantity cm3/
1000S.: 32.00...33.00

KSB/AFB 11
valve Volt: 12
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2,5
1000S.: (2,5)

Low-idle speed regulation

Speed 1/min: 450
Del. quantity cm3/
1000S.: 8.00...10.00

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Residual-Delivery Setting

Speed 1/min: 525
Del. quantity cm3/
1000S.: 3.50...4.50

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2735
Del. quantity cm3/
1000S.: 7.00...11.00

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100

Del. quantity cm³/: 28.00...44.00
mind 1000S.: 28.00
KSB/AFB
Valve Volt: 12
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1000
Inj.-qty. cm³/
difference 1000S.: - 8.00...10.0 #
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
SP press.-dif.measurement
pompa di mandata (FP)
1.Speed 1/min: 1000
Supply pump
pressure
difference bar: - 0.1...0.3 #
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

3rd speed 1/min: 1000
TD travel mm: 2.00...2.40
mm: (1.50...2.90)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
4th speed 1/min: 800
TD travel mm: 0.90...1.70
mm: (0.60...2.00)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
5th speed 1/min: 2300
TD travel mm: 7.50...8.30
mm: (7.20...8.60)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
9th speed 1/min: 300
TD travel mm: 0.80...3.20 A
mm: (0.80...3.20)

KSB/AFB
valve Volt: 12

Shutoff
electromagnet Volt: 12
10th speed 1/min: 800
TD travel mm: 1.90...4.30 B
mm: (1.90...4.30)

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 2300
Supply-pump
pressure bar: 7.60...8.20

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1000
Supply-pump
pressure bar: 4.00...4.60

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 800
Supply-pump
pressure bar: 3.40...4.00

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 700
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)

2nd speed 1/min: 2300
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

5th speed 1/min: 2735
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 7.00...11.00
 1000S.: (5.00...13.00)
 8th speed 1/min: 2575
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 17.00...23.00
 1000S.: -
 9th speed 1/min: 2300
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 27.20...29.80
 1000S.: (26.20...30.80)
 10th speed 1/min: 2000
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 28.00...31.00
 1000S.: (27.20...31.80)
 12th speed 1/min: 1300
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 32.00...33.00
 1000S.: (30.20...34.80)
 20th speed 1/min: 700
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 25.40...28.40
 1000S.: (23.90...29.90)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 450
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 Shutoff
 electromagnet volt: -

Damper set qty.:

LFG-setting:
 solidale con carcassa:
 Idle delivery:

1st speed 1/min: 450
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Del. quantity cm³/: 8.00...10.00
 1000S.: (5.50...12.50)

High Idle:

1st speed 1/mi: 550
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 8.00...10.00
 1000S.: (5.50...12.50)

Residual:

1. Rotacao 1/min: 525
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 3.50...4.50
 1000S.: (2.00...6.00)
 2nd speed 1/min: 750
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...1.60
 1000S.: -

Load-dependent start of delivery:
 Inj.-qty.dif.measurement:

1st speed 1/min: 1000
 Inj.-qty. cm³/: - 11.0..19.0'
 difference 1000S.: -
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

TD-travel dif.measurement:
 correttore anticipo iniezione (SV):
 1st speed 1/min: 1000
 TD-travel : - 0.6..0.8 '
 difference mm: -
 KSB/AFB
 valve Volt: 12
 Shutoff
 electromagnet Volt: 12

Part-load del.at 3rd inj.-qty.
 terza fermo della portata
 stop (EGR set)
 scarico) (ARF)
 gaz d'échappement-ARF)
 Spacing mm: 12.0

1st speed 1/min: 1000

KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 21.40...23.40
1000S.: (19.90...24.90)

Automatic starting fuel delivery:

1st speed 1/min: 400
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 25.00...35.00
1000S.: (25.00...35.00)

2nd speed 1/min: 550
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 22.50...32.50
1000S.: (22.50...32.50)

3rd speed 1/min: 100
KSB/AFB
valve Volt: 12
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 28.00...44.00
1000S.: -

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 5.3...5.7
MS mm: 1.3...1.7

Remarks:

:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 21.08.92
 Replaces : 14.10.91
 Test oil : ISO-4113

Combination no. : 0 400 074 087

Injection pump
 Pump designation : PES4M55C32ORS175
 EP type number : 0 410 054 957
 Governor
 Governor design. : RSV350...1650MOC353-7
 Governor no. : 0 420 033 043

Customer-spec. information
 Customer : MB-NFZ

Engine : OM601 (2,3L)

1st version kW : 51.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10
 : (1.95...2.15)
 Rack travel in mm : 20.00...22.00

E09

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1630

Rack travel in mm : 12.10...12.20

Del.quantity cm³/ : 4.0...4.1

100 s: (3.9...4.2)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 350.0

Rack travel in mm : 5.3...5.5

Del.quantity cm³/ : 0.5...0.7

100 s: (0.4...0.9)

Spread cm³ : 0.1

100 s: (0.1)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1630

Del.quantity : 40.0...41.0

1000 : (39.0...42.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 109...117

Testing:

1st rack travel in: 11.2

Speed rpm : 1670..1680

2nd rack travel in: 4.00

Speed rpm : 1775...1793

4th rack travel in: 2000

Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 72...80
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.4

Testing:

Speed rpm : 100
Minimum rack trave: 20.10
Speed rpm : 350
Rack travel in mm : 5.30...5.50

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1630
Rack travel in m: 12.10...12.20
2nd speed rpm : 1000
Rack travel in m: 12.60...12.80
3rd speed rpm : 1400
Rack travel in m: 12.30...12.50

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1000
Del.quantity cm3/ : 38.5...40.0
1000 s: (37.5...41.0)
Spread cm3 : 2.50
1000 s: (3.0)
Speed rpm : 1400
Del.quantity cm3/ : 38.5...40.5
1000 s: (37.5...41.5)
Spread cm3 : 2.50
1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 52.0...0.0
1000 s: (52.0...0.0)
Rack travel in mm : 20.10...0.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.30...5.50
Del.quantity cm3/ : 5.0...7.0
1000 s: (4.5...9.0)
Spread cm3 : 1.00
1000 s: (1.50)

Remarks:

:

Start-of-delivery sensor system:
adjustment and blocking with device
KDEP 1077 = 15.3°...15.7°
(15.2...15.8°) angular displacement of
cam following start of delivery of
cylinder no. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 27.11.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 074 090
 Injection pump
 Pump designation : PES4M55C32ORS175
 EP type number : 0 410 054 957
 Governor
 Governor design. : RSV350...1650MUC353-
 13
 Governor no. : 0 420 033 050

Customer-spec. information
 Customer : MB-NFZ

Engine : OM601 (2,3L)

1st version kW : 50.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 1 688 901 111

Opening
 pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10
 : (1.95...2.15)
 Rack travel in mm : 20.00...22.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1630

Rack travel in mm : 11.80...11.90

Del.quantity cm³/ : 3.9...4.0

100 s : (3.8...4.1)

Spread cm³ : 0.2

100 s : (0.3)

2nd speed rpm : 350.0

Rack travel in mm : 5.3...5.5

Del.quantity cm³/ : 0.6...0.8

100 s : (0.5...1.0)

Spread cm³ : 0.1

100 s : (0.1)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1630

Del.quantity : 39.0...40.0

1000 : (38.0...41.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever
 position degrees: 102...110

Testing:

1st rack travel in: 10.9

Speed rpm : 1685...1695

2nd rack travel in: 4.00

Speed rpm : 1766...1784

4th rack travel in: 2000

Speed rpm : 0.30...1.70

LOW IDLE 1

Control Lever

position degrees: 66...74

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 5.4

Testing:

Speed rpm : 100

Minimum rack travel: 20.10

Speed rpm : 350

Rack travel in mm : 5.30...5.50

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1630

Rack travel in m: 11.80...11.90

2nd speed rpm : 1000

Rack travel in m: 11.70...11.90

FUEL DELIVERY CHARACTERISTICS

1st version:

Speed rpm : 1000

Del.quantity cm³/ : 37.0...39.0

1000 s: (36.0...40.0)

Spread cm³ : 2.50

1000 s: (3.0)

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 54.0...0.0

1000 s: (54.0...0.0)

Rack travel in mm : 20.10...0.00

LOW IDLE

Speed rpm : 350

Rack travel in mm : 5.30...5.50

Del.quantity cm³/ : 6.0...8.0

1000 s: (5.5...10.0)

Spread cm³ : 1.00

1000 s: (1.50)

Remarks:

:

Start-of-delivery sensor system:

adjustment and blocking with device

KDEP 1077 = 15.3°...15.7°

(15.2...15.8°) angular displacement of
cam following start of delivery of
cylinder no. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 11.01.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 074 886
 Injection pump
 Pump designation : PES4M55C32ORS167
 EP type number : 0 410 054 960
 Governor
 Governor design. : RSF375/2000M55-7
 Governor no. : 0 420 021 268

Customer-spec. information
 Customer : MB-PKW

Engine : OM601-2.3L

1st version kW : 59.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 1 688 901 111

Opening
 pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10
 : (1.95...2.15)
 Rack travel in mm : 20.00...22.00
 Firing order : 1- 3- 4- 2

E13

Phasing : 0-90-180-270
 Tolerance + - ° : 0.00 (1.00)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000
 Rack travel in mm : 12.10...12.20
 Del. quantity cm³/ : 3.8...3.9
 100 s : (3.7...4.0)
 Spread cm³ : 0.2
 100 s : (0.3)

2nd speed rpm : 375.0
 Rack travel in mm : 5.1...5.3
 Del. quantity cm³/ : 0.6...0.7
 100 s : (0.5...1.0)
 Spread cm³ : 0.1
 100 s : (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1000
 Del. quantity : 38.0...39.0
 1000 : (37.0...40.0)
 Spread cm³ : 2.50
 1000 : (3.00)

RATED SPEED

1st version
 Control lever
 position degrees: 50...0
 3rd rack travel in: 7.00...7.50
 Speed rpm : 2200
 4th rack travel in: 2500
 Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER
 POSITION

Speed rpm : 1000
 Rack travel in mm : 1,40...1,50

LOW IDLE 1

Control lever
 position degrees: 12...16
 Setting point w/out bumper spring
 Speed rpm : 375

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 18.12.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 074 888
 Injection pump
 Pump designation : PES4M55C32ORS183
 EP type number : 0 410 054 955
 Governor
 Governor design. : RSE375/23JOM55-12
 Governor no. : 0 420 021 169

Customer-spec. information
 Customer : MB-PKW

Engine : OM601-ECE(W202)

1st version kW : 55.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 1 688 901 111

Opening
 pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80
 : (1.65...1.85)

Rack travel in mm : 20.00...22.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.90...13.00

Del. quantity cm³/ : 3.6...3.7

100 s: (3.5...3.8)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 375.0

Rack travel in mm : 6.7...6.9

Del. quantity cm³/ : 0.6...0.7

100 s: (0.5...1.0)

Spread cm³ : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del. quantity : 36.0...37.0

1000 : (35.0...38.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever
 position degrees: 50...0

3rd rack travel in: 8.8...9.2

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER

POSITION

Speed rpm : 1000

Rack travel in mm : 1,9...2,0

LOW IDLE 1

Control lever
 position degrees: -

Setting point w/out bumper spring

Speed rpm : 375
Rack travel in mm : 6.8

Testing:

Speed rpm : 250
Minimum rack travel: 11.00
Speed rpm : 375
Rack travel in mm : 6.70...6.90
Rack travel in mm : 3.00
Speed rpm : 650...750
Speed rpm : 1000
Maximum rack travel: 2.00

SET IDLE AUXILIARY SPRING

Speed rpm : 500
Rack travel in mm : 4.60...4.80
 : (4.50...4.90)

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 12.90...13.00
2nd speed rpm : 1600
Rack travel in m: 12.40...12.60
3rd speed rpm : 2300
Rack travel in m: 11.70...11.90

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 1000
Pressure hPa : 940
Rack travel mm : 0.00...0.20

Measurement

Speed 1/min : 1000
1st pressure hPa : 900
Rack travel in m: 0.30...0.50
2nd pressure hPa : 750
Rack travel in m: 1.40...1.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1100
Speed rpm : 1600
Del.quantity cm3/ : 36.0...37.5
 1000 s: (35.0...38.5)
Spread cm3 : 2.50
 1000 s: (3.0)
Aneroid pressure h: 1100
Speed rpm : 2300
Del.quantity cm3/ : 36.0...38.0
 1000 s: (35.0...39.0)

Spread cm3 : 2.50
 1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 54.0...0.0
 1000 s: (52.0...0.0)
Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version

Aneroid pressure h: 1100
Speed rpm : 2500
Rack travel in mm : 8.80...9.20
Del.quantity cm3/ : 22.0...26.0
 1000 s: (21.0...27.0)
Spread cm3 : 2.50
 1000 s: (3.00)

LOW IDLE

Speed rpm : 375
Rack travel in mm : 6.70...6.90
Del.quantity cm3/ : 6.0...7.0
 1000 s: (5.5...10.0)
Spread cm3 : 1.00
 1000 s: (1.50)

SETTING PNEUMATIC FAST IDLE
(ELA)

Speed rpm : 425
Rack travel in mm : (8.2...9.8)
Del.quantity cm3/ : -
 1000 s: (13.00...21.0)
Vacuum hPa : 400

Remarks:

Sliding sleeve pre-travel = 6.5 mm

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.
With n = 375 1/min. and pu = 450 mbar,
control rod must move quickly to
control-rod travel = 0 mm

CHECKING THE IDLE-SPEED AUXILIARY
SPRING CUTOFF

-Control-lever position 49°, max.
0.2 mm control-rod travel deduction
allowable after switchover point (of

starting cam) up to 1000 1/min.
Control-lever position 46.5° ,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 23.10.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 074 889
 Injection pump
 Pump designation : PES4M55C320RS172
 EP type number : 0 410 054 958
 Governor
 Governor design. : RSF375/2300M75-2
 Governor no. : 0 420 021 166

Customer-spec. information
 Customer : MB-PKW

Engine : OM601-Mopf II

1st version kW : 53.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 1 688 901 111

Opening
 pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80
 : (1.65...1.85)
 Rack travel in mm : 20.00...22.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.30...12.40

Del. quantity cm³/ : 3.3...3.4

100 s: (3.2...3.5)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 375.0

Rack travel in mm : 6.4...6.6

Del. quantity cm³/ : 0.6...0.7

100 s: (0.5...1.0)

Spread cm³ : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del. quantity : 33.0...34.0

1000 : (32.0...35.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever
 position degrees: 50...0

3rd rack travel in: 8.20...8.60

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER

POSITION

Speed rpm : 1000

Rack travel in mm : 1,40...1,50

LOW IDLE 1

Control lever
 position degrees: 12...16

Setting point w/out bumper spring

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.

With $n = 375$ 1/min. and $p_u = 450$ mbar,
control rod must move quickly to
control-rod travel = 0 mm

Start-of-delivery sensor system:
adjustment and blocking with device

KDEP 1077 = $16.8^\circ \dots 17.2^\circ$
($16.7 \dots 17.3^\circ$) angular displacement of
cam following start of delivery of
cylinder no. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 18.12.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 074 890
 Injection pump
 Pump designation : PES4M55C320RS183
 EP type number : 0 410 054 955
 Governor
 Governor design. : RSF375/2300M75-1
 Governor no. : 0 420 021 163

Customer-spec. information
 Customer : MB-PKW

Engine : OM601-ECE(W202)

1st version kw : 55.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 1 688 901 111

Opening
 pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80
 : (1.65...1.85)

Rack travel in mm : 20.00...22.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.90...13.00

Del.quantity cm³/ : 3.6...3.7

100 s: (3.5...3.8)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 375.0

Rack travel in mm : 6.7...6.9

Del.quantity cm³/ : 0.6...0.7

100 s: (0.5...1.0)

Spread cm³ : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del.quantity : 36.0...37.0

1000 : (35.0...38.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.80...9.20

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER

POSITION

Speed rpm : 1000

Rack travel in mm : 1.90...2.00

LOW IDLE 1

Control lever

position degrees: -

Setting point w/out bumper spring

Speed rpm : 375
Rack travel in mm : 6.8

Testing:

Speed rpm : 250
Minimum rack travel : 11.00
Speed rpm : 375
Rack travel in mm : 6.70...6.90
Rack travel in mm : 3.00
Speed rpm : 650...750
Speed rpm : 1000
Maximum rack travel : 2.00

SET IDLE AUXILIARY SPRING

Speed rpm : 500
Rack travel in mm : 4.90...5.10
 : (4.80...5.20)

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000
Rack travel in m : 12.90...13.00
2nd speed rpm : 1600
Rack travel in m : 12.40...12.60
3rd speed rpm : 2300
Rack travel in m : 11.70...11.90

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 1000
Pressure hPa : 940
Rack travel mm : 0.00...0.20

Measurement

Speed 1/min : 1000

1st pressure hPa : 900
Rack travel in m : 0.30...0.50
2nd pressure hPa : 750
Rack travel in m : 1.40...1.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h : 1100
Speed rpm : 1600
Del. quantity cm³/ : 36.0...37.5
 1000 s : (35.0...38.5)
Spread cm³ : 2.50
 1000 s : (3.0)
Aneroid pressure h : 1100
Speed rpm : 2300
Del. quantity cm³/ : 36.0...38.0
 1000 s : (35.0...39.0)

Spread cm³ : 2.50
 1000 s : (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 54.0...0.0
 1000 s : (52.0...0.0)
Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version

Aneroid pressure h : 1100
Speed rpm : 2500
Rack travel in mm : 8.80...9.20
Del. quantity cm³/ : 22.0...26.0
 1000 s : (21.0...27.0)
Spread cm³ : 2.50
 1000 s : (3.00)

LOW IDLE

Speed rpm : 375
Rack travel in mm : 6.70...6.90
Del. quantity cm³/ : 6.0...7.0
 1000 s : (5.5...10.0)
Spread cm³ : 1.00
 1000 s : (1.50)

SETTING PNEUMATIC FAST IDLE (ELA)

Speed rpm : 425
Rack travel in mm : (8,2...9.8)
Del. quantity cm³/ : -
 1000 s : (13.0...21.0)
Vacuum hPa : 400

Remarks:

:

Sliding sleeve pre-travel = 6.5 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49°, max.
0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.
Control-lever position 46.5°,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.

With $n = 375$ 1/min. and $p_u = 450$ mbar,
control rod must move quickly to
control-rod travel = 0 mm



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 25.09.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 074 891
 Injection pump
 Pump designation : PES4M55C320RS169
 EP type number : 0 410 054 959
 Governor
 Governor design. : RSF375/2300M75
 Governor no. : 0 420 021 160

Customer-spec. information
 Customer : MB-PKW

Engine : OM601-ECE

1st version kW : 55.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 1 688 901 111

Opening
 pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10
 : (1.95...2.15)

Rack travel in mm : 20.00...22.00
 Firing order : 1-3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.30...12.40

Del. quantity cm³/ : 3.3...3.4

100 s : (3.2...3.5)

Spread cm³ : 0.2

100 s : (0.3)

2nd speed rpm : 375.0

Rack travel in mm : 6.4...6.6

Del. quantity cm³/ : 0.6...0.7

100 s : (0.5...1.0)

Spread cm³ : 0.1

100 s : (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del. quantity : 33.0...34.0

1000 : (32.0...35.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8.50...8.90

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1,2...1,3

LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

Speed rpm : 375
Rack travel in mm : 6.5

Testing:

Speed rpm : 250
Minimum rack travel: 11.00
Speed rpm : 375
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.00
Speed rpm : 660...760
Speed rpm : 1000
Maximum rack travel: 1.30

SET IDLE AUXILIARY SPRING

Speed rpm : 400
Rack travel in mm : 5.3...5.5
 : (5.2...5.6)

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000
Rack travel in m: 12.30...12.40
2nd speed rpm : 1800
Rack travel in m: 11.70...11.90
3rd speed rpm : 2300
Rack travel in m: 11.40...11.60

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 1000
Pressure hPa : 950
Rack travel mm : 0.00...0.20

Measurement

Speed 1/min : 1000

1st pressure hPa : 900
Rack travel in m: 0.50...0.70
2nd pressure hPa : 750
Rack travel in m: 1.80...2.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1100
Speed rpm : 1800
Del.quantity cm3/ : 33.0...34.5
 1000 s: (32.0...35.5)
Spread cm3 : 2.50
 1000 s: (3.0)
Aneroid pressure h: 1100
Speed rpm : 2300
Del.quantity cm3/ : 34.0...36.0
 1000 s: (33.0...37.0)

Spread cm3 : 2.50
 1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 54.0...0.0
 1000 s: (52.0...0.0)
Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version

Aneroid pressure h: 1100
Speed rpm : 2500
Rack travel in mm : 8.50...8.90
Del.quantity cm3/ : 22.0...26.0
 1000 s: (21.0...27.0)
Spread cm3 : 2.50
 1000 s: (3.00)

LOW IDLE

Speed rpm : 375
Rack travel in mm : 6.40...6.60
Del.quantity cm3/ : 6.0...7.0
 1000 s: (5.5...10.0)
Spread cm3 : 1.00
 1000 s: (1.50)

SETTING PNEUMATIC FAST IDLE (ELA)

Speed rpm : 425
Rack travel in mm : (8.1...9.7)
Del.quantity cm3/ : -
 1000 s: (12.0...20.0)
Vacuum hPa : 400

Remarks:

Sliding sleeve pre-travel = 6.5 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49°, max.
0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.
Control-lever position 46.5°,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.
With $n = 375$ 1/min. and $p_u = 450$ mbar,
control rod must move quickly to
control-rod travel = 0 mm

Start-of-delivery sensor system:
adjustment and blocking with device
KDEP 1077 = $19.3^\circ \dots 19.7^\circ$
($19.2 \dots 19.8^\circ$) angular displacement of
cam following start of delivery of
cylinder no. 1.

ADJUSTMENT OF ACTIVE BUCKING DAMPING (ARD)

Control lever on full-load stop. At $n = 1000$ min. -1 ,
 $I = 2.5$ A, difference in delivery referenced to full-load
delivery (9.0...11.0) ccm/1000 strokes.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 13.03.92
 Replaces : 15.10.91
 Test oil : ISO-4113

Combination no. : 0 400 074 895

Injection pump
 Pump designation : PES4M55C320RS110
 EP type number : 0 410 054 956
 Governor
 Governor design. : RSF375/1700M21-1
 Governor no. : 0 420 021 149

Customer-spec. information
 Customer : MB-NFZ UNTERTAGE

Engine : OM616 2.4L ADA
 1st version kW : 41.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 012

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80
 : (1.65...1.85)
 Rack travel in mm : 20.00...0.00
 Firing order : 1- 3- 4- 2

E27

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.70...11.80

Del.quantity cm³/ : 3.1...3.2

100 s : (3.0...3.3)

Spread cm³ : 0.2

100 s : (0.3)

2nd speed rpm : 375.0

Rack travel in mm : 6.3...6.5

Del.quantity cm³/ : 0.6...0.7

100 s : (0.5...0.9)

Spread cm³ : 0.1

100 s : (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del.quantity : 31.5...32.5

1000 : (30.5...33.5)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 6.7...7.1

Speed rpm : 1900

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER

POSITION

Speed rpm : 1000

Rack travel in mm : 1.4...1.5

LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

Speed rpm : 375

Rack travel in mm : 6.4

Testing:

Speed rpm : 250
Minimum rack trave: 10.00
Speed rpm : 375
Rack travel in mm : 6.30...6.50
Rack travel in mm : 2.00
Speed rpm : 730...830
Speed rpm : 1000
Maximum rack trave: 1.50

SET IDLE AUXILIARY SPRING

Speed rpm : 450
Rack travel in mm : 5.1...5.3
 : (5.0...5.4)

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 11.70...11.80
2nd speed rpm : 1400
Rack travel in m: 11.30...11.50
3rd speed rpm : 1700
Rack travel in m: 11.00...11.20

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 1000
Pressure hPa : 950
Rack travel mm : 0.00...0.20

Measurement

Speed 1/min : 1000

1st pressure hPa : 900
Rack travel in m: 0.50...0.70
2nd pressure hPa : 750
Rack travel in m: 1.80...2.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1100
Speed rpm : 1400
Del.quantity cm3/ : 33.0...34.5
 1000 s: (32.0...35.5)

Spread cm3 : 2.50
 1000 s: (3.0)

Aneroid pressure h: 1100
Speed rpm : 1700
Del.quantity cm3/ : 33.0...35.0
 1000 s: (32.0...36.0)

Spread cm3 : 2.50
 1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 52.0...0.0
 1000 s: (52.0...0.0)
Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version

Aneroid pressure h: 1100
Speed rpm : 1900
Rack travel in mm : 6.70...7.10
Del.quantity cm3/ : 13.0...17.0
 1000 s: (12.0...18.0)
Spread cm3 : 2.50
 1000 s: (3.00)

LOW IDLE

Speed rpm : 375
Rack travel in mm : 6.30...6.50
Del.quantity cm3/ : 6.0...7.0
 1000 s: (5.5...9.0)
Spread cm3 : 1.00
 1000 s: (1.50)

Remarks:

:

CHECKING THE IDLE-SPEED AUXILIARY
SPRING CUTOFF

-Control-lever position 49°, max.
0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.
Control-lever position 46.5°,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.
With n = 375 1/min. and pu = 450 mbar,
control rod must move quickly to
control-rod travel = 0 mm

Sliding sleeve pre-travel = 6.0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 13.03.92
 Replaces : 22.03.91
 Test oil : ISO-4113

Combination no. : 0 400 074 896

Injection pump
 Pump designation : PES4M55C320RS110
 EP type number : 0 410 054 956
 Governor
 Governor design. : RSF375/2200M21
 Governor no. : 0 420 021 148

Customer-spec. information
 Customer : MB-NFZ

Engine : OM616 2.4l ADA
 1st version kW : 55.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 012

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80
 : (1.65...1.85)

Rack travel in mm : 20.00...0.00

Firing order : 1- 3- 4- 2

F01

Phasing : 0-90-180-270
 Tolerance + - ° : 0.00 (1.00)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.60...12.70

Del.quantity cm³/ : 3.6...3.7
 100 s : (3.5...3.8)

Spread cm³ : 0.2
 100 s : (0.3)

2nd speed rpm : 375.0
 Rack travel in mm : 6.1...6.3
 Del.quantity cm³/ : 0.6...0.7
 100 s : (0.5...0.9)

Spread cm³ : 0.1
 100 s : (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1000
 Aneroid pressure h: 1100
 Del.quantity : 36.0...37.0
 1000 : (35.0...38.0)

Spread cm³ : 2.50
 1000 : (3.00)

RATED SPEED

1st version
 Control lever
 position degrees: 50...0
 3rd rack travel in: 7.8...8.2
 Speed rpm : 2350
 4th rack travel in: 2950
 Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER
 POSITION

Speed rpm : 1000
 Rack travel in mm : 1.4...1.5

LOW IDLE 1

Control lever
 position degrees: 8...12
 Setting point w/out bumper spring
 Speed rpm : 375
 Rack travel in mm : 6.2

Testing:

Speed rpm : 250
Minimum rack trave: 10.00
Speed rpm : 375
Rack travel in mm : 6.10...6.30
Rack travel in mm : 2.00
Speed rpm : 730...830
Speed rpm : 1000
Maximum rack trave: 1.50

SET IDLE AUXILIARY SPRING

Speed rpm : 450
Rack travel in mm : 5.1...5.3
: (5.0...5.4)

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000
Rack travel in m: 12.60...12.70
2nd speed rpm : 1700
Rack travel in m: 12.20...12.40
3rd speed rpm : 2100
Rack travel in m: 11.80...12.00

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 1000
Pressure hPa : 950
Rack travel mm : 0.00...0.20

Measurement

Speed 1/min : 1000

1st pressure hPa : 900
Rack travel in m: 0.50...0.70
2nd pressure hPa : 750
Rack travel in m: 1.80...2.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1100
Speed rpm : 1700
Del.quantity cm3/ : 38.0...40.0
1000 s: (37.0...41.0)
Spread cm3 : 2.50
1000 s: (3.0)
Aneroid pressure h: 1100
Speed rpm : 2100
Del.quantity cm3/ : 37.0...39.0
1000 s: (36.0...40.0)
Spread cm3 : 2.50
1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 52.0...0.0
1000 s: (52.0...0.0)
Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version

Aneroid pressure h: 1100
Speed rpm : 2350
Rack travel in mm : 7.80...8.20
Del.quantity cm3/ : 18.0...22.0
1000 s: (17.0...23.0)
Spread cm3 : 2.50
1000 s: (3.00)

LOW IDLE

Speed rpm : 375
Rack travel in mm : 6.10...6.30
Del.quantity cm3/ : 6.0...7.0
1000 s: (5.5...9.0)
Spread cm3 : 1.00
1000 s: (1.50)

Remarks:

Sliding sleeve pre-travel = 6.0 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49°, max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.
With n = 375 1/min. and pu = 450 mbar, control-rod must move quickly to control-rod travel = 0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 18.12.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 074 904
 Injection pump
 Pump designation : PES4M55C320RS169
 EP type number : 0 410 054 959
 Governor
 Governor design. : RSF375/2300M56-6
 Governor no. : 0 420 021 110

Cust. part no. : T8

Customer-spec. information
 Customer : MB-PKW

Engine : OM601-ECE

1st version kW : 53.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 1 688 901 111

Opening
 pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10
 : (1.95...2.15)

F03

Rack travel in mm : 20.00...22.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.30...12.40

Del.quantity cm³/ : 3.3...3.4

100 s : (3.2...3.5)

Spread cm³ : 0.2

100 s : (0.3)

2nd speed rpm : 375.0

Rack travel in mm : 6.4...6.6

Del.quantity cm³/ : 0.6...0.7

100 s : (0.5...1.0)

Spread cm³ : 0.1

100 s : (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del.quantity : 33.0...34.0

1000 : (32.0...35.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control Lever

position degrees: 50...0

3rd rack travel in: 8.5...8.9

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER
 POSITION

Speed rpm : 1000

Rack travel in mm : 1.2...1.3

LOW IDLE 1

Control Lever

position degrees: 12...16
Setting point w/out bumper spring
Speed rpm : 375
Rack travel in mm : 6.5

Testing:

Speed rpm : 250
Minimum rack travel: 11.00
Speed rpm : 375
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.00
Speed rpm : 660...760
Speed rpm : 1000
Maximum rack travel: 1.30

SET IDLE AUXILIARY SPRING

Speed rpm : 400
Rack travel in mm : 5.3...5.5
: (5.2...5.6)

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 12.30...12.40
2nd speed rpm : 1800
Rack travel in m: 11.70...11.90
3rd speed rpm : 2300
Rack travel in m: 11.40...11.60

Aneroid/Altitude Compensator Test

1st version

Pressure hPa : 950
Rack travel mm : 0.00...0.20

1st pressure hPa : 900
Rack travel in m: 0.50...0.70
2nd pressure hPa : 750
Rack travel in m: 1.80...2.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1100
Speed rpm : 1800
Del.quantity cm³/ : 33.0...34.5
1000 s: (32.0...35.5)
Spread cm³ : 2.50
1000 s: (3.0)
Aneroid pressure h: 1100
Speed rpm : 2300
Del.quantity cm³/ : 34.0...36.0
1000 s: (33.0...37.0)
Spread cm³ : 2.50
1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 54.0...0.0
1000 s: (54.0...0.0)
Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version

Aneroid pressure h: 1100
Speed rpm : 2500
Rack travel in mm : 8.50...8.90
Del.quantity cm³/ : 22.0...26.0
1000 s: (21.0...27.0)
Spread cm³ : 2.50
1000 s: (3.00)

LOW IDLE

Speed rpm : 375
Rack travel in mm : 6.40...6.60
Del.quantity cm³/ : 6.0...7.0
1000 s: (5.5...10.0)
Spread cm³ : 1.00
1000 s: (1.50)

SETTING PNEUMATIC FAST IDLE (ELA)

Speed rpm : 425
Rack travel in mm : (8.1...9.7)
Del.quantity cm³/ : -
1000 s: (12.0...20.3)
Vacuum hPa : 400

Remarks:

Sliding sleeve pre-travel = 6.5 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49°, max.
0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.
Control-lever position 46.5°,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.
With n = 375 1/min. and pu = 450 mbar,
control rod must move quickly to
control-rod travel = 0 mm

Start-of-delivery sensor system:
adjustment and blocking with device
KDEP 1077 = 19.3°...19.7°
(19.2...19.8°) angular displacement of
cam following start of delivery of
cylinder no. 1.



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 21.08.92
 Replaces : 15.10.91
 Test oil : ISO-4113

Combination no. : 0 400 075 009

Injection pump
 Pump designation : PES5M55C320RS176
 EP type number : 0 410 055 975
 Governor
 Governor design. : RSV350...1650MOC353-
 6
 Governor no. : 0 420 033 042

Customer-spec. information
 Customer : MB-NFZ

Engine : OM602 (2,9L)

1st version kW : 62.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10
 : (1.95...2.15)

Rack travel in mm : 20.00...22.00

Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1630

Rack travel in mm : 12.10...12.20

Del.quantity cm³/ : 4.0...4.1

100 s: (3.9...4.2)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 350.0

Rack travel in mm : 5.3...5.5

Del.quantity cm³/ : 0.5...0.7

100 s: (0.4...0.9)

Spread cm³ : 0.1

100 s: (0.1)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1630

Del.quantity : 40.5...41.5

1000 : (39.5...42.5)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 109...117

Testing:

1st rack travel in: 11,2

Speed rpm : 1670...1680

2nd rack travel in: 4.00

Speed rpm : 1775...1793

4th rack travel in: 2000

Speed rpm : 0.30...1.70

E07

E08

LOW IDLE 1
 Control lever
 position degrees: 72...80
 Setting point w/out bumper spring
 Speed rpm : 350
 Rack travel in mm : 5.4

Testing:
 Speed rpm : 100
 Minimum rack travel: 20.10
 Speed rpm : 350
 Rack travel in mm : 5.30...5.50

SET IDLE AUXILIARY SPRING
 Rack travel in mm : 2.00

TORQUE CONTROL
 Torque control curve - 1st version
 1st speed rpm : 1630
 Rack travel in m: 12.10...12.20
 2nd speed rpm : 1000
 Rack travel in m: 12.90...13.10
 3rd speed rpm : 1400
 Rack travel in m: 12.50...12.70

FUEL DELIVERY CHARACTERISTICS

1st version
 Speed rpm : 1000
 Del.quantity cm3/ : 40.0...41.5
 1000 s: (39.0...42.5)
 Spread cm3 : 2.50
 1000 s: (3.0)
 Speed rpm : 1400
 Del.quantity cm3/ : 39.5...41.5
 1000 s: (38.5...42.5)
 Spread cm3 : 2.50
 1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100
 Del.quantity cm3/ : 52.0...0.0
 1000 s: (52.0...0.0)
 Rack travel in mm : 20.10...0.00

LOW IDLE

Speed rpm : 350
 Rack travel in mm : 5.30...5.50
 Del.quantity cm3/ : 5.0...7.0
 1000 s: (4.5...9.0)
 Spread cm3 : 1.00
 1000 s: (1.50)

Remarks:

F07

Start-of-delivery sensor system:
 adjustment and blocking with device
 KDEP 1077 = 15.3°...15.7°
 (15.2...15.8°) angular displacement of
 cam following start of delivery of
 cylinder no. 1.

BOSCH INJ.

Note remarks

Test sheet
Edition
Replaces
Test oil

Combination

Injection
Pump design
EP type
Governor
Governor
Governor

Customer
Customer

Engine

1st version

TEST BEN

Test oil
inlet test

Overflow

Inlet pressure

Test nozzle
assembly

Opening
pressure

Test line

Outside
x Wall thickness
x Length

(A) Injection
Insp
Set
per

BEGINNING
Test pressure

Prestroke

Rack travel
Firing order

F08

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD

Rack travel in mm : 9.00...12.00
 Firing order : 1- 8- 7- 2- 6- 5-
 4- 3

Speed

LOW IDLE
Control
position

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 30.04.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 075 013
 Injection pump
 Pump designation : PES5M55C32ORS176
 EP type number : 0 410 055 975
 Governor
 Governor design. : RSV/00..1800MOC355
 Governor no. : 0 420 033 049

Customer-spec. information
 Customer : MB-NFZ

Engine : OM602 D 29

1st version kW : 67.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10
 : (1.95...2.15)

Rack travel in mm : 20.00...22.00
 Firing order : 1- 2- 4- 5- 3

F08

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1800

Rack travel in mm : 11.80...11.90

Del. quantity cm³/ : 4.0...4.1

100 s: (3.9...4.2)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 400.0

Rack travel in mm : 5.3...5.5

Del. quantity cm³/ : 0.5...0.7

100 s: (0.4...0.9)

Spread cm³ : 0.1

100 s: (0.1)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1800

Del. quantity : 40.5...41.5

1000 : (39.5...42.5)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 83...91

Testing:

1st rack travel in: 10.80

Speed rpm : 1840...1850

2nd rack travel in: 4.00

Speed rpm : 1920...1940

4th rack travel in: 2250

Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 55...63
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.4

Testing:
Speed rpm : 100
Minimum rack trave: 20.10
Speed rpm : 400
Rack travel in mm : 5.30...5.50

SET IDLE AUXILIARY SPRING
Rack travel in mm : 2.00

TORQUE CONTROL
Torque control curve - 1st version.
1st speed rpm : 1800
Rack travel in m: 11.80...11.90
2nd speed rpm : 1000
Rack travel in m: 12.40...12.60
3rd speed rpm : 1400
Rack travel in m: 12.20...12.40

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 1000
Del.quantity cm³/ : 38.0...39.5
1000 s: (37.0...40.5)
Spread cm³ : 2.50
1000 s: (3.0)
Speed rpm : 1400
Del.quantity cm³/ : 39.0...41.0
1000 s: (38.0...42.0)
Spread cm³ : 2.50
1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 52.0...0.0
1000 s: (52.0...0.0)
Rack travel in mm : 20.10...0.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.30...5.50
Del.quantity cm³/ : 5.0...7.0
1000 s: (4.5...9.0)
Spread cm³ : 1.00
1000 s: (1.50)

Remarks:
:

Start-of-delivery sensor system:
adjustment and blocking with device
KDEP 1077 = 15.3°...15.7°
(15.2...15.8°) angular displacement of
cam following start of delivery of
cylinder no. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 05.10.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 075 014
 Injection pump
 Pump designation : PES5M55C32ORS176
 EP type number : 0 410 055 975
 Governor
 Governor design. : RSV350...1650MOC353-
 14
 Governor no. : 0 420 033 051

Customer-spec. information
 Customer : MB-NFZ

Engine : OM602 (2,9L)
 1st version kW : 62.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 469 990 351
 Inlet press., bar : 1.00
 Test nozzle holder
 assembly : 1 688 901 111
 Opening
 pressure, bar : 147...150
 Test lines : 1 680 750 014
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32
 Prestroke mm : 2.00...2.10
 : (1.95...2.15)
 Rack travel in mm : 20.00...22.00

Firing order : 1- 2- 4- 5- 3
 Phasing : 0-72-144-216-288
 Tolerance + - ° : 0.00 (1.00)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1630
 Rack travel in mm : 12.20...12.30
 Del. quantity cm³/ : 4.0...4.1
 100 s : (3.9...4.2)
 Spread cm³ : 0.2
 100 s : (0.3)
 2nd speed rpm : 350.0
 Rack travel in mm : 5.1...5.3
 Del. quantity cm³/ : 0.6...0.8
 100 s : (0.5...1.0)
 Spread cm³ : 0.1
 100 s : (0.1)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1630
 Del. quantity : 40.5...41.5
 1000 : (39.5...42.5)
 Spread cm³ : 2.50
 1000 : (3.00)

RATED SPEED

1st version
 Control lever
 position degrees: 108...116

Testing:
 1st rack travel in: 11.3
 Speed rpm : 1670...1680
 2nd rack travel in: 4.00
 Speed rpm : 1775...1793
 4th rack travel in: 2000
 Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 71...79
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.2

Testing:

Speed rpm : 100
Minimum rack trave: 20.10
Speed rpm : 350
Rack travel in mm : 5.10...5.30

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1630
Rack travel in m: 12.20...12.30
2nd speed rpm : 1000
Rack travel in m: 12.20...12.30

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1000
Del.quantity cm³/ : 38.5...40.5
1000 s: (37.5...41.5)
Spread cm³ : 2.50
1000 s: (3.0)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 54.0...0.0
1000 s: (54.0...0.0)
Rack travel in mm : 20.10...0.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.10...5.30
Del.quantity cm³/ : 6.0...8.0
1000 s: (5.5...10.0)
Spread cm³ : 1.00
1000 s: (1.50)

Remarks:

:

Start-of-delivery sensor system:
adjustment and blocking with device
KDEP 1077 = 15.3°...15.7°
(15.2...15.8°) angular displacement of
cam following start of delivery of
cylinder no. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 18.12.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 075 923
 Injection pump
 Pump designation : PES5M55C320RS168
 EP type number : 0 410 055 978
 Governor
 Governor design. : RSF350/2000M55-8
 Governor no. : 0 420 021 269

Customer-spec. information
 Customer : MB-PKW

Engine : OM602-2.9L

1st version kW : 70.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 1 688 901 111

Opening
 pressure, bar : 147...150

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10
 : (1.95...2.15)
 Rack travel in mm : 20.00...22.00
 Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000
 Rack travel in mm : 12.10...12.20
 Del. quantity cm³/ : 3.8...3.9
 100 s : (3.7...4.0)
 Spread cm³ : 0.2
 100 s : (0.3)

2nd speed rpm : 350.0
 Rack travel in mm : 5.2...5.4
 Del. quantity cm³/ : 0.6...0.7
 100 s : (0.5...1.0)
 Spread cm³ : 0.1
 100 s : (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1000
 Del. quantity : 38.0...39.0
 1000 : (37.0...40.0)
 Spread cm³ : 2.50
 1000 : (3.00)

RATED SPEED

1st version
 Control lever
 position degrees: 50...0
 3rd rack travel in: 7.00...7.50
 Speed rpm : 2200
 4th rack travel in: 2500
 Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER
 POSITION

Speed rpm : 1000
 Rack travel in mm : 1.4...1.5

LOW IDLE 1

Control lever
 position degrees: 12...16
 Setting point w/out bumper spring
 Speed rpm : 350

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 04.03.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 075 927
 Injection pump
 Pump designation : PES5M55C32ORS168
 EP type number : 0 410 055 978
 Governor
 Governor design. : RSF350/2000M69-8
 Governor no. : 0 420 021 167

Customer-spec. information
 Customer : MB-PKW

Engine : OM602-2.9L

1st version kW : 72.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10
 : (1.95...2.15)

Rack travel in mm : 20.00...22.00
 Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.50...12.60

Del.quantity cm³/ : 3.8...3.9

100 s : (3.7...4.0)

Spread cm³ : 0.2

100 s : (0.3)

2nd speed rpm : 350.0

Rack travel in mm : 5.2...5.4

Del.quantity cm³/ : 0.5...0.6

100 s : (0.4...0.9)

Spread cm³ : 0.1

100 s : (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h : 1100

Del.quantity : 38.0...39.0

1000 : (37.0...40.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever
 position degrees: 50...0

3rd rack travel in: 7.10...7.60

Speed rpm : 2200

4th rack travel in: 2500

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER

POSITION

Speed rpm : 1000

Rack travel in mm : 1.4...1.5

LOW IDLE 1

Control lever
 position degrees: 11...15

Setting point w/out bumper spring

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 p
 Edition : 15.01.93
 Replaces : 03.08.90
 Test oil : ISO-4113
 Combination no. : 0 402 036 733
 Injection pump
 Pump designation : PES6P120A720/3LS3247
 EP type number : 0 412 026 735
 Governor
 Governor design. : RGV300...11COPAS76-4
 Governor no. : 0 421 813 851

Customer-spec. information

Customer : MAN
 Engine : D2866LXF/A00
 1st version kw : 273.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 019
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 067
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
 : (3.65...3.85)
 Rack travel in mm : 14.50...15.50
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.90...6.10
 & maximum rack tra: 14.5...15.5
 Difference ° CS : 2.00...4.00

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 15.00...15.10
 Del.quantity cm³/ : 24.2...24.4
 100 s: (23.9...24.7)

Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 4.8...5.2
 Del.quantity cm³/ : 1.7...2.3
 100 s: (1.4...2.6)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1145
 travel mm : 8.30...8.50
 2nd speed rpm : 300
 travel mm : 1.10...1.30
 3rd speed rpm : 500
 travel mm : 2.90...3.50
 4th speed rpm : 900
 travel mm : 5.90...6.30
 5th speed rpm : 1450
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1140
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700
Aneroid pressure h: 1200
Del. quantity : 242.0...244.0
1000 : (239.0...247.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 298...306

Testing:

1st rack travel in: 13.60
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1260...1290
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 259...267

Testing:

Speed rpm : 200
Minimum rack travel: 6.50
Speed rpm : 300
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

Speed rpm : 320...430

TORQUE CONTROL

Dimension a mm : 0.50
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 14.50...14.60
2nd speed rpm : 700
Rack travel in m: 15.00...15.10
3rd speed rpm : 950
Rack travel in m: 14.70...14.90

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 15.00...15.10

Measurement

Speed 1/min : 500

F17

1st pressure hPa : -
Rack travel in m: 11.70...11.90
2nd pressure hPa : 110
Rack travel in m: 12.00...12.10
3rd pressure hPa : 470
Rack travel in m: 14.00...14.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1100
Del. quantity cm³/ : 230.0...236.0
1000 s: (227.0...239.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 134.0...136.0
1000 s: (131.0...139.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.60
Speed rpm : 1140...1150

INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 210.0...230.0
1000 s: (206.0...234.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.80...5.20
Del. quantity cm³/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7890

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 18.12.92
 Replaces : 10.92
 Test oil : ISO-4113
 Combination no. : 0 402 648 907
 Injection pump
 Pump designation : PE8P120A320LS7839-10
 EP type number : 0 412 628 855
 Governor
 Governor design. : RQV300...950PA797-22
 Governor no. : 0 421 813 909

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kw : 370.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 550
 Rack travel in mm : 15.10...15.30
 Del.quantity cm³/ : 26.5...26.7
 100 s: (26.2...27.0)
 Spread cm³ : 0.6
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 6.0...6.6
 Del.quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm³ : 0.6
 100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.00...1.50
 2nd speed rpm : 617
 travel mm : 5.00...5.50
 3rd speed rpm : 780
 travel mm : 6.10...6.60
 4th speed rpm : 1010
 travel mm : 8.30...8.80
 5th speed rpm : 1092
 travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1050
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 550

Aneroid pressure h: 900
Del. quantity : 265.0...267.0
1000 : (262.0...270.0)
Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 118...126

Testing:

1st rack travel in: 15.00
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1100...1130
4th rack travel in: 1200
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever
position degrees: 82...90

Testing:

Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.20...6.40

CONSTANT REGULATION

Speed rpm : 300...400

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 400
Pressure hPa : 900
Rack travel mm : 15.10...15.30

Measurement

Speed 1/min : 400

1st pressure hPa : 250
Rack travel in m: 10.00...10.20
2nd pressure hPa : 550
Rack travel in m: 12.80...12.90
3rd pressure hPa : 1100
Rack travel in m: 15.20...15.40 *
4th pressure hPa : 1300
Rack travel in m: 15.60...15.70
5th pressure hPa : -
Rack travel in m: 9.10...9.40

START CUT-OUT

Speed 1/min : 240 (260)

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FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 2000
Speed rpm : 950
Del. quantity cm³/ : 281.0...284.0
1000 s: (278.0...287.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 15.00
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 275.0...295.0
1000 s: (271.0...299.0)

Remarks:

:

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV
Edition : 15.01.93
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/9F2250R328-3
Type number : 0 460 494 258
Customer Part-No. :

Customer-specific information
Customer : VW

Engine : 066T-1.6 LLK

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Charge press. hPa: 750
Setting value mm: 3.00...3.40
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250
Charge press hPa: 750
Setting value bar: 4.90...5.50
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 750
Del. quantity cm3/
1000S.: 42.00...43.00

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.5
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 700
Del. quantity cm3/
1000S.: 26.50...27.50

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 425
Del. quantity cm3/
1000S.: 9.00...11.00

Shutoff
electromagnet Volt: 12.0
Del. quantity cm3/: 2.5
1000S.: (3.0)

Residual-Delivery Setting

Speed 1/min: 550
Del. quantity cm3/
1000S.: 2.00...3.00

Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2525
Charge press hPa: 750
Del. quantity cm3/
1000S.: 13.00...17.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 35.00...85.00
mind 1000S.: 35.00

Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1250
Inj.-qty. cm³/
difference 1000S.: 7.00...9.00 #
Shutoff
electromagnet Volt: 12
SP press.-dif.measurement
pompa di mandata (FP)
1.Speed 1/min: 1250
Supply pump
pressure
difference bar: 0.10...0.30#
Shutoff
electromagnet Volt: 12.0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 2250
Charge press hPa: 750
TD travel mm: 7.00...7.80
mm: (6.70...8.10)

electromagnet Volt: 12
2nd speed 1/min: 2000
Charge press hPa: 750
TD travel mm: 6.40...7.20
mm: (6.10...7.50)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
Charge press hPa: 750
TD travel mm: 3.00...3.40
mm: (2.50...3.90)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 1000
Charge press hPa: 750
TD travel mm: 1.70...2.50
mm: (1.40...2.80)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 700
Charge press. hPa: 750
Supply-pump
pressure bar: 3.30...3.90
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1250
Charge press. hPa: 750
Supply-pump
pressure bar: 4.90...5.50
Shutoff
electromagnet Volt: 12

3rd speed 1/min: 2250
Charge press. hPa: 750
Supply-pump
pressure bar: 7.70...8.30
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 700
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (27.80...97.30)
2nd speed 1/min: 2250
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Overflow : 55.60...152.90
quantity cm³/10s: (41.70...166.80)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 900
Charge-air pressure-setting
point hPa: 300*
LDA-stroke mm: 5.5
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 33.00...34.00
1000S.: (30.50...36.50)

2nd speed 1/min: 2650
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...6.00
1000S.: (0.00...6.00)

5th speed 1/min: 2525
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 13.00...17.00
1000S.: (11.00...19.00)

8th speed 1/min: 2425
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 26.50...36.50
1000S.: (25.50...37.50)

9th speed 1/min: 2250
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 36.30...38.30
1000S.: (35.10...39.50)

12th speed 1/min: 1500
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 42.00...43.00
1000S.: (40.30...44.70)
14th speed 1/min: 600
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 25.00...30.00
1000S.: (22.5...32.50)
18th speed 1/min: 700
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 34.0...37.0
1000S.: (32.5...38.5)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 425
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Damper set qty.:

LFG-setting:
solidale con carcassa:
Idle delivery:

1st speed 1/min: 425
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 9.00...11.00
1000S.: (4.50...15.50)

High Idle:

1st speed 1/mi: 525
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 9.00...11.00
1000S.: (5.00...15.00)

Residual:

1. Rotacao 1/min: 550
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 2.00...3.00
1000S.: (0.00...5.50)
2nd speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 2.50...4.50
1000S.: (0.00...7.00)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1250
Inj.-qty. cm³/ : 9.0...13.0
difference 1000S.: -
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
Inj.-qty. cm³/: MAX. 3.00 "
difference 1000S.: -

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1250
TD-travel : 0.60...0.80 "
difference mm: -
Shutoff
electromagnet Volt: 12.0
2nd speed 1/min: 1250
TD-travel : 1.00...1.40 "
difference mm: -
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1250
Supply pump-
pressure : 0.60...1.00 "
difference bar: -
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 150
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.00...85.00
1000S.: (35.00...85.00)

2nd speed 1/min: 350
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 17.00...37.00
1000S.: (17.00...37.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.00...85.00
1000S.: (35.00...85.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: K1
KF	mm: 5.6...6.0
MS	mm: 1.3...1.5
LDA stroke	mm: 5.5

Remarks:

⋮

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV
Edition : 15.01.93
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/9F2250R270-1
Type number : 0 460 494 269
Customer Part-No. :

Customer-specific information
Customer : VW

Engine : 068.4-1.6l Caddy

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250
Setting value mm: 2.10...2.50
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250

F24

Setting value bar: 4.90...5.50

Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Dispersion cm³/ : 2.5
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 1000
Del. quantity cm³/
1000S.: 28.5...29.5

Shutoff
electromagnet Volt: 12
Dispersion cm³/ : 2,5
1000S.: (3.0)

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm³/
1000S.: 11.0...13.0

Shutoff
electromagnet Volt: 12
Del. quantity cm³/ : 2.0
1000S.: (3.0)

Residual-Delivery Setting

Speed 1/min: 550
Del. quantity cm³/
1000S.: 2.50...3.50

Shutoff
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2475
Del. quantity cm³/
1000S.: 14.00...18.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/ : 35.00...85.00
mind 1000S.: 35.00

Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1250
Inj.-qty. cm³/
difference 1000S.: 6.50...12.50 #

Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1250
TD-travel
difference mm: 0.60...0.80 #
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2250
TD travel mm: 6.50...7.30
mm: (6.20...7.50)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1250
TD travel mm: 2.10...2.50
mm: (1.60...3.00)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 1000
TD travel mm: 0.90...1.70
mm: (0.60...2.00)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 600
Supply-pump
pressure bar: 3.00...3.60

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1250
Supply-pump
pressure bar: 4.90...5.50

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 2250
Supply-pump
pressure bar: 7.70...8.30

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 600
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 41.70...83.40
(27.80...97.30)
2nd speed 1/min: 2250
Shutoff
electromagnet Volt: 12

Overflow quantity cm³/10s: 55.60...152.90
(41.70...166.80)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2700
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 0.00...6.00
(0.00...6.00)

5th speed 1/min: 2475
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 14.00...18.00
(12.00...20.00)

8th speed 1/min: 2400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 18.00...28.00
(17.00...29.00)

9th speed 1/min: 2250
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 27.50...29.50
(26.30...30.70)

10th speed 1/min: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 28.5...29.5
(26.8...31.2)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 425
Del. quantity cm³/1000S.: 0.00...3.00
(0.00...3.00)

Shutoff
electromagnet volt: -

Damper set qty.:

LFG-setting:
solidale con carcassa:
Idle delivery:

1st speed 1/min: 375
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 11.00...13.00
(8.00...16.00)

2nd speed 1/min: 425
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000S.: 5.50...8.50
(3.00...11.00)

Dispersion cm³/1000S.: 2.0
(3.0)

High Idle:

1st speed 1/min: 525
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 7.00...9.00
1000S.: (4.00...12.00)

Residual:

1. Rotacao 1/min: 550
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 2.50...3.50
1000S.: (1.00...5.00)
2nd speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 3.20...5.20
1000S.: (1.70...6.70)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

3rd speed 1/min: 1250
Inj.-qty. cm³/: MAX. 3.00 "
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1250
TD-travel : 1.40...1.80 "
difference mm: -
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1250
Supply pump-
pressure : 1.10...1.50 "
Shutoff
electromagnet Volt: 12.0
3rd speed 1/min: 1250
Supply pump-
pressure : 1.10...1.50
difference bar: (0.90...1.70)
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 180
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.00...85.00
1000S.: (35.00...85.00)

2nd speed 1/min: 380
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 10.00...30.00
1000S.: (10.00...30.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.00...85.00
1000S.: (35.00...85.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 5,6...6.0
MS mm: 1.2...1.6

Remarks:

:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
 Edition : 21.09.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 400 640 101AA

Injection pump
 Pump designation : PE12A95D610LS2453
 EP type number : 0 410 690 998
 Governor
 Governor design. : RQV300...1150AB1056D
 L
 Governor no. : 0 420 214 245

Customer-spec. information
 Customer : KHD

Engine : BF12L413FW

1st version kW : 277.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
 : (1.95...2.15)

Rack travel in mm : 9.00...~~12.00~~
 Firing order : 1- 4- 9- 8- 5- 2-
 11- 10- 3- 6- 7- 12

Phasing : 0-15-60-75-120-135-
 180-195-240-255-300-
 315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 10.50...10.60

Del. quantity cm³/ : 9.4...9.6
 100 s : (9.2...9.8)

Spread cm³ : 0.3
 100 s : (0.6)

2nd speed rpm : 300.0
 Rack travel in mm : 6.4...6.6
 Del. quantity cm³/ : 1.1...1.7
 100 s : (0.8...1.9)

Spread cm³ : 0.3
 100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1150
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1150
 Aneroid pressure h: 700
 Del. quantity : 94.0...96.0
 1000 : (92.0...98.0)

Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 62...70

Testing:

1st rack travel in: 9.40
 Speed rpm : 1190...1200
 2nd rack travel in: 4.00

Speed rpm : 1235...1265
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 10...18

Testing:

Speed rpm : 100
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.40...6.60

CONSTANT REGULATION

Speed rpm : 310...380

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1150
Rack travel in m: 10.50...10.60
2nd speed rpm : 775
Rack travel in m: 10.50...10.60
3rd speed rpm : 930
Rack travel in m: 10.70...10.90

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 10.50...10.60

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.30...10.40
2nd pressure hPa : 329
Rack travel in m: 10.60...10.70
3rd pressure hPa : 280
Rack travel in m: 10.40...10.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 775
Del. quantity cm³/ : 98.5...101.5
1000 s: (96.0...104.0)
Aneroid pressure h: -
Speed rpm : 500

Del. quantity cm³/ : 77.0...79.0
1000 s: (75.0...81.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.40
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 14.40...14.60

Remarks:

:
Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

11- 10- 3- 6- 7- 12

Note remarks

Test sheet : KHD
 Edition : 21.09.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 640 113AH
 Injection pump
 Pump designation : PE12A95D610LS2453
 EP type number : 0 410 690 998
 Governor
 Governor design. : RQV300...1250AB1223L
 Governor no. : 0 420 212 092

Customer-spec. information
 Customer : KHD

Engine : F12L413F

1st version kW : 254.0
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Prestroke mm : 2.00...2.10
 : (1.95...2.15)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 4- 9- 8- 5- 2-

Phasing : 0-15-60-75-120-135-
 180-195-240-255-300-
 315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 9.60...9.70

Del. quantity cm³/ : 8.7...8.9

100 s : (8.5...9.1)

Spread cm³ : 0.3

100 s : (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del. quantity cm³/ : 1.1...1.7

100 s : (0.8...1.9)

Spread cm³ : 0.3

100 s : (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 200
 travel mm : 0.70...0.80

2nd speed rpm : 500
 travel mm : 2.60...2.80

3rd speed rpm : 900
 travel mm : 5.60...5.80

4th speed rpm : 1300
 travel mm : 8.60...8.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1275

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del. quantity : 87.0...89.0

1000 : (85.0...91.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 8.60
Speed rpm : 1290...1300
2nd rack travel in: 4.50
Speed rpm : 1340...1370
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 80...88

Testing:
Speed rpm : 100
Minimum rack trave: 8.00
Speed rpm : 300
Rack travel in mm : 6.40...6.60

CONSTANT REGULATION
Speed rpm : 375...485

TORQUE CONTROL
Dimension a mm : 0.50
Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 9.60...9.70
2nd speed rpm : 650
Rack travel in m: 10.10...10.20
3rd speed rpm : 850
Rack travel in m: 9.80...10.00

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 650
Del.quantity cm3/ : 84.5...87.5
1000 s: (82.0...90.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 8.60
Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 13.50...14.20

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
 Edition : 29.11.91
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 646 279
 Injection pump
 Pump designation : PE6A95D410LS2621
 EP type number : 0 410 696 982
 Governor
 Governor design. : RQV350...1150AB1195-1L
 Governor no. : 0 420 212 231

Customer-spec. information
 Customer : KHD

Engine : F6L413F

1st version kW : 141.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
 : (1.95...2.15)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 6- 5- 4- 3- 2

Phasing : 0-75-120-195-240-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 9.30...9.40

Del. quantity cm³/ : 7.6...7.7

100 s: (7.4...7.9)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.9...7.1

Del. quantity cm³/ : 1.1...1.7

100 s: (0.8...1.9)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.10...1.50

2nd speed rpm : 370

travel mm : 1.40...1.90

3rd speed rpm : 420

travel mm : 2.30...2.80

4th speed rpm : 770

travel mm : 4.70...5.20

5th speed rpm : 1200

travel mm : 8.30...8.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1290

Rack travel in mm : 7.00...9.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del. quantity : 76.5...77.5

1000 : (74.5...79.5)

Spread cm³ : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 115...123

Testing:

1st rack travel in: 8.30
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1240...1270

LOW IDLE 1

Control lever
position degrees: 84...92

Testing:

Speed rpm : 200
Minimum rack travel: 11.20
Speed rpm : 350
Rack travel in mm : 6.90...7.10
Rack travel in mm : 2.00
Speed rpm : 440...500

TORQUE CONTROL

Dimension a mm : 0.70
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 9.30...9.40
2nd speed rpm : 500
Rack travel in m: 10.10...10.20
3rd speed rpm : 800
Rack travel in m: 9.80...10.00
4th speed rpm : 1000
Rack travel in m: 9.50...9.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650
Del. quantity cm³/ : 75.0...77.0
1000 s: (72.5...79.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 8.30
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 15.20...15.60

Remarks:

: WARDAM

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
 Edition : 18.12.91
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 648 131
 Injection pump
 Pump designation : PE8A95D320LS2421
 EP type number : 0 410 698 994
 Governor
 Governor design. : RQ750AB1155R
 Governor no. : G 420 201 627

Customer-spec. information

Customer : MAN
 Engine : D2538 MTE

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 000
 Inlet press., bar : 1.00
 Test nozzle holder
 assembly : 0 681 343 009
 Opening
 pressure, bar : 172...175
 Test lines : 1 680 750 014
 Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Prestroke mm : 1.70...1.80
 : (1.65...1.85)
 Rack travel in mm : 9.00...12.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. nc. : 8

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 13.40...13.50
 Del. quantity cm³/ : 13.3...13.5
 100 s : (13.1...13.7)
 Spread cm³ : 0.3
 2nd speed rpm : 250.0
 Rack travel in mm : 6.4...6.6
 Del. quantity cm³/ : 1.5...2.1
 100 s : (1.2...2.3)
 Spread cm³ : 0.3

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Del. quantity : 133.5...135.5
 1000 : (131.5...137.5)
 Spread cm³ : 3.00

RATED SPEED

1st version
 Testing:
 1st rack travel in: 12.40
 Speed rpm : 750...755
 2nd rack travel in: 4.00
 Speed rpm : 775...785
 4th rack travel in: 795
 Speed rpm : 0.00...1.00

BREAKAWAY

1st version
 1mm rack travel less than
 full load rack tr: 12.40
 Speed rpm : 750...755

Remarks: :

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
 Edition : 31.07.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 678 038
 Injection pump
 Pump designation : PE8A95D410LS2451
 EP type number : 0 410 698 992
 Governor
 Governor design. : RSV300...1000A7C1002
 L
 Governor no. : 0 420 232 309

Customer-spec. information
 Customer : KHD

Engine : F8L413F

1st version kW : 147.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
 : (1.95...2.15)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 8- 7- 2- 6- 5-
 4- 3

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000
 Rack travel in mm : 9.10...9.20
 Del.quantity cm³/ : 7.9...8.1
 100 s : (7.7...8.3)
 Spread cm³ : 0.3
 100 s : (0.6)

2nd speed rpm : 300.0
 Rack travel in mm : 5.9...6.1
 Del.quantity cm³/ : 1.1...1.8
 100 s : (0.8...2.0)
 Spread cm³ : 0.3
 100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1000
 Del.quantity : 79.5...81.5
 1000 : (77.5...83.5)
 Spread cm³ : 3.00
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 64...72

Testing:
 1st rack travel in: 8.10
 Speed rpm : 1040...1050
 2nd rack travel in: 4.00
 Speed rpm : 1065...1095
 4th rack travel in: 1150

Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever

position degrees: 24...32

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 5.5

Testing:

Speed rpm : 100

Minimum rack trave: 19.50

Speed rpm : 300

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00

Speed rpm : 420...510

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000

Rack travel in m: 9.10...9.20

2nd speed rpm : 400

Rack travel in m: 9.70...9.80

3rd speed rpm : 700

Rack travel in m: 9.40...9.50

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700

Del.quantity cm³/ : 80.5...83.5

1000 s: (78.5...85.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.10

Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 116.5...126.5

1000 s: (113.5...129.5)

Rack travel in mm : 14.20...14.60

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
 Edition : 21.08.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 678 040
 Injection pump
 Pump designation : PE8A95D410LS2608
 EP type number : 0 410 698 988
 Governor
 Governor design. : RSV300...1325A8C1002
 L
 Governor no. : 0 420 232 310

Customer-spec. information
 Customer : KHD

Engine : F8L413F
 1st version kW : 188.0
 Rated speed : 2650

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 419 992 198
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 0 681 343 009
 Opening
 pressure, bar : 172...175
 Test lines : 1 680 750 014
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 2.00...2.10
 : (1.95...2.15)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 8- 7- 2- 6- 5-
 4- 3

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1325
 Rack travel in mm : 9.70...9.80
 Del.quantity cm³/ : 9.1...9.3
 100 s : (8.9...9.5)
 Spread cm³ : 0.3
 100 s : (0.6)

2nd speed rpm : 300.0
 Rack travel in mm : 5.9...6.1
 Del.quantity cm³/ : 0.9...1.5
 100 s : (0.6...1.7)
 Spread cm³ : 0.5
 100 s : (0.9)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1325
 Del.quantity : 91.5...93.5
 1000 : (89.5...95.5)
 Spread cm³ : 3.00
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 109...117

Testing:
 1st rack travel in: 8.70
 Speed rpm : 1365...1375
 2nd rack travel in: 4.00
 Speed rpm : 1390...1420
 4th rack travel in: 1575

Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever

position degrees: 66...74

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 6.0

Testing:

Speed rpm : 100

Minimum rack trave: 19.00

Speed rpm : 300

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00

Speed rpm : 310...370

Speed rpm : 700

Maximum rack trave: 1.00

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1325

Rack travel in m: 9.70...9.80

2nd speed rpm : 500

Rack travel in m: 10.00...10.10

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.70

Speed rpm : 1365...1375

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 116.5...127.5

1000 s: (113.5...130.5)

Rack travel in mm : 14.00...14.40

HIGH IDLE

1st version

Rack travel in mm : 3.90...4.10

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 3,8 g 2
 Edition : 27.11.92
 Replaces : 09.92
 Test oil : ISO-4113

Combination no. : 0 400 844 047

Injection pump
 Pump designation : PES4A90D410RS2294
 EP type number : 0 410 894 011
 Governor
 Governor design. : RQV300...1425AB740L
 Governor no. : 0 420 212 037

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 314

1st version kw : 62.5
 Rated speed : 2850

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.15...2.25
 : (2.10...2.30)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 9.70...9.80

Del. quantity cm³/ : 6.2...6.3

100 s: (6.0...6.5)

Spread cm³ : 0.3

100 s: (0.4)

2nd speed rpm : 300.0

Rack travel in mm : 7.2...7.4

Del. quantity cm³/ : 0.9...1.5

100 s: (0.7...1.7)

Spread cm³ : 0.2

100 s: (0.4)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1460

travel mm : 8.40...8.60

2nd speed rpm : 950

travel mm : 5.20...5.50

3rd speed rpm : 775

travel mm : 4.10...4.60

4th speed rpm : 550

travel mm : 2.70...3.00

5th speed rpm : 300

travel mm : 0.70...1.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1420

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del. quantity : 62.5...63.5

1000 : (60.5...65.5)

Spread cm³ : 3.00

1000 : (4.50)

RATED SPEED

1st version
Control lever
position degrees: 114...122

Testing:
1st rack travel in: 8.70
Speed rpm : 1455...1465
2nd rack travel in: 4.00
Speed rpm : 1535...1565
4th rack travel in: 1700
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 66...74

Testing:
Speed rpm : 100
Minimum rack trave: 8.80
Speed rpm : 300
Rack travel in mm : 7.20...7.40

CONSTANT REGULATION
Speed rpm : 370...520

START CUT-OUT

Speed 1/min : 220 (240)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 8.70
Speed rpm : 1455...1465

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 71.0...81.0
1000 s: (68.0...84.0)
Rack travel in mm : 13.70...14.30

Remarks:
:

APPLICATION

Unimog

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 4,0 a 11
 Edition : 27.11.92
 Replaces : 09.92
 Test oil : ISO-4113
 Combination no. : 0 400 844 091
 Injection pump
 Pump designation : PES4A90D410RS2666
 EP type number : 0 410 894 029
 Governor
 Governor design. : RQV300...1400AB1065-12L
 Governor no. : 0 420 212 207

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM364

1st version kw : 61.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35
 : (2.20...2.40)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 10.50...10.60

Del.quantity cm3/ : 5.9...6.0

100 s: (5.7...6.2)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 300.0

Rack travel in mm : 8.6...8.8

Del.quantity cm3/ : 0.8...1.2

100 s: (0.6...1.4)

Spread cm3 : 0.2

100 s: (0.4)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 0.80...1.30

2nd speed rpm : 500
 travel mm : 2.30...2.80

3rd speed rpm : 750
 travel mm : 4.10...4.30

4th speed rpm : 1500
 travel mm : 8.50...8.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1400
 Del.quantity : 59.0...60.0
 1000 : (57.0...62.0)
 Spread cm3 : 3.00
 1000 : (5.00)

RATED SPEED

1st version
 Control lever
 position degrees: 112...120

Testing:
 1st rack travel in: 9.50

Speed rpm : 1440...1450
2nd rack travel in: 4.00
Speed rpm : 1535...1565
4th rack travel in: 1700
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 72...80

Testing:
Speed rpm : 100
Minimum rack trave: 10.20
Speed rpm : 300
Rack travel in mm : 8.60...8.80

CONSTANT REGULATION
Speed rpm : 540...680

TORQUE CONTROL
Dimension a mm : 1.00
Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 10.50...10.60
2nd speed rpm : 475
Rack travel in m: 11.50...11.60
3rd speed rpm : 850
Rack travel in m: 10.90...11.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 475
Del.quantity cm³/ : 45.0...47.0
1000 s: (42.5...49.5)
Speed rpm : 850
Del.quantity cm³/ : 47.5...50.5
1000 s: (45.0...53.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.50
Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 17.00...17.40

Remarks:

:
Set shutoff stop to contact at
3.0...3.5 mm control-rod travel.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 4,0 j 1
 Edition : 21.01.93
 Replaces : 04.92
 Test oil : ISO-4113
 Combination no. : 0 400 844 096
 Injection pump
 Pump designation : PES4A95D410RS2809
 EP type number : 0 410 894 993
 Governor
 Governor design. : RQV300...1400AB1065-23L
 Governor no. : 0 420 212 227

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 364

1st version kW : 65.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 419 992 198
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 0 681 343 009
 Opening
 pressure, bar : 172...175
 Test lines : 1 680 750 015
 Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400
 Rack travel in mm : 9.90...10.00
 Del. quantity cm³/ : 6.4...6.6
 100 s: (6.2...6.8)
 Spread cm³ : 0.3
 100 s: (0.6)
 2nd speed rpm : 300.0
 Rack travel in mm : 8.5...8.7
 Del. quantity cm³/ : 0.8...1.2
 100 s: (0.5...1.4)
 Spread cm³ : 0.3
 100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 0.80...1.30
 2nd speed rpm : 500
 travel mm : 2.30...2.80
 3rd speed rpm : 750
 travel mm : 4.10...4.30
 4th speed rpm : 1500
 travel mm : 8.50...8.60

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1450
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1400
 Del. quantity : 64.5...66.5
 1000 : (62.5...68.5)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 111...119

Testing:
1st rack travel in: 8.90
Speed rpm : 1450...1460
2nd rack travel in: 4.00
Speed rpm : 1535...1565
4th rack travel in: 1670
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 73...81

Testing:
Speed rpm : 100
Minimum rack travel: 9.60
Speed rpm : 300
Rack travel in mm : 8.50...8.70

CONSTANT REGULATION
Speed rpm : 550...700

TORQUE CONTROL
Dimension a mm : 1.20
Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 9.90...10.00
2nd speed rpm : 400
Rack travel in m: 11.10...11.20
3rd speed rpm : 630
Rack travel in m: 10.70...11.00
4th speed rpm : 925
Rack travel in m: 10.40...10.70

START CUT-OUT
Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 400
Del.quantity cm3/ : 49.0...53.0
1000 s: (46.5...55.5)
Speed rpm : 630
Del.quantity cm3/ : 51.5...55.5
1000 s: (49.0...58.0)
Speed rpm : 925
Del.quantity cm3/ : 57.0...61.0
1000 s: (54.5...63.5)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 8.90
Speed rpm : 1450...1460

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 14.40...14.80

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 5,7 v 10
 Edition : 27.11.92
 Replaces : 09.92
 Test oil : ISO-4113
 Combination no. : 0 400 846 493
 Injection pump
 Pump designation : PES6A90D41QRS2596
 EP type number : 0 410 896 073
 Governor
 Governor design. : RQV300...1400AB1120-1L
 Governor no. : 0 420 212 157

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM352A

1st version kW : 124.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
 : (1.95...2.15)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 11.90...12.00

Del. quantity cm³/ : 7.3...7.4

100 s: (7.1...7.6)

Spread cm³ : 0.3

100 s: (0.4)

2nd speed rpm : 300.0

Rack travel in mm : 8.5...8.7

Del. quantity cm³/ : 0.9...1.5

100 s: (0.7...1.7)

Spread cm³ : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1500

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Aneroid pressure h: 700

Del. quantity : 73.0...74.0

1000 : (71.5...76.5)

Spread cm³ : 3.00

1000 : (4.50)

RATED SPEED

1st version

Control lever

position degrees: 111...119

Testing:

1st rack travel in: 10.90

Speed rpm : 1440...1450

2nd rack travel in: 4.00

Speed rpm : 1570...1600

4th rack travel in: 1750

Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 70...78

Testing:
Speed rpm : 100
Minimum rack travel: 10.10
Speed rpm : 300
Rack travel in mm : 8.50...8.70

CONSTANT REGULATION
Speed rpm : 590...660

TORQUE CONTROL
Dimension a mm : 1.10
Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 11.90...12.00
2nd speed rpm : 500
Rack travel in m: 13.00...13.10
3rd speed rpm : 1000
Rack travel in m: 12.70...12.90
4th speed rpm : 1200
Rack travel in m: 12.10...12.40

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 13.00...13.10

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.90...12.00
2nd pressure hPa : 320
Rack travel in m: 12.70...12.80
3rd pressure hPa : 220
Rack travel in m: 12.20...12.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 500
Del.quantity cm³/ : 67.5...69.5
1000 s: (65.5...71.5)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 56.0...58.0
1000 s: (54.0...60.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.90
Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 72.0...82.0
1000 s: (69.0...85.0)
Rack travel in mm : 14.90...15.30

Remarks:

Set shutoff stop to contact at
3.0...3.5 mm control-rod travel.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 6,1 p
 Edition : 27.11.92
 Replaces : 09.92
 Test oil : ISO-4113

Combination no. : 0 400 846 549

Injection pump
 Pump designation : PES6A95D410RS2471
 EP type number : 0 410 896 952
 Governor
 Governor design. : RQV300...1250AB1089-2L
 Governor no. : 0 420 212 190

Customer-spec. information
 Customer : KHD

Engine : BF6L913C

1st version kW : 141.0
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
 : (1.85...2.05)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 11.60...11.70

Del. quantity cm³/ : 10.1...10.3
 100 s: (9.9...10.5)

Spread cm³ : 0.3
 100 s: (0.6)

2nd speed rpm : 300.0
 Rack travel in mm : 7.2...7.4
 Del. quantity cm³/ : 1.0...1.6
 100 s: (0.7...1.8)

Spread cm³ : 0.3
 100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.30...1.40
 2nd speed rpm : 650
 travel mm : 3.70...3.90
 3rd speed rpm : 1200
 travel mm : 6.90...7.10
 4th speed rpm : 1290
 travel mm : 8.40...8.50

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1290
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1250
 Del. quantity : 101.0...103.0
 1000 : (99.0...105.0)

Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 118...126

Testing:
1st rack travel in: 10.60
Speed rpm : 1290...1300
2nd rack travel in: 4.00
Speed rpm : 1345...1375
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 69...77

Testing:
Speed rpm : 100
Minimum rack trave: 9.00
Speed rpm : 300
Rack travel in mm : 7.20...7.40

CONSTANT REGULATION
Speed rpm : 350...485

TORQUE CONTROL
Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 11.60...11.70
2nd speed rpm : 500
Rack travel in m: 11.60...11.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 850
Del.quantity cm³/ : 95.5...98.5
1000 s: (93.0...101.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.60
Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 122.0...132.0
1000 s: (119.0...135.0)

Rack travel in mm : 15.80...16.20

Remarks:

APPLICATION

Combine-harvester

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC
 Edition : 05.02.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 846 578AA
 Injection pump
 Pump designation : PES6A95D32GRS2779
 EP type number : 0 410 896 903
 Governor
 Governor design. : RQV350...1200AB1236-7R
 Governor no. : 0 420 213 119

Customer-spec. information
 Customer : NAVISTAR

Engine : DT 466

1st version kW : 145.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
 assembly : 1 688 901 110

Opening
 pressure, bar : 250...253

Orifice plate
 diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 27...29

Prestroke mm : 2.65...2.75
 : (2.60...2.80)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1200
 Rack travel in mm : 13.10...13.20
 Del. quantity cm³/ : 9.7...9.9
 100 s : (9.5...10.1)
 Spread cm³ : 0.3
 100 s : (0.6)

2nd speed rpm : 350
 Rack travel in mm : 5.3...5.5
 Del. quantity cm³/ : 1.6...2.0
 100 s : (1.4...2.2)
 Spread cm³ : 0.3
 100 s : (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL
 1st speed rpm : 1400
 travel mm : 8.60...9.00
 2nd speed rpm : 1250
 travel mm : 7.30...7.50
 3rd speed rpm : 550
 travel mm : 3.10...3.70
 4th speed rpm : 350
 travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1200
 Aneroid pressure h: 900
 Del. quantity : 97.0...99.0
 1000 : (95.0...101.0)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 41...49

Testing:
1st rack travel in: 12.10
Speed rpm : 1255...1285
2nd rack travel in: 4.00
Speed rpm : 1375...1385
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 11...19

Testing:
Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 350
Rack travel in mm : 5.30...5.50

CONSTANT REGULATION
Speed rpm : 350...500

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.10...13.20

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.00...9.20
2nd pressure hPa : 235
Rack travel in m: 10.10...10.20
3rd pressure hPa : 520
Rack travel in m: 12.00...12.40

START CUT-OUT

Speed 1/min : 270 (280)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 65.0...69.0
1000 s: (63.0...71.0)

BREAKAWAY

G22

1st version
1mm rack travel less than
full load rack tr: 12.50
Speed rpm : 1230...1260

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...170.0
1000 s: (125.0...175.0)
Rack travel in mm : 16.20...17.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.90...6.10
Del.quantity cm3/ : 17.0...21.0
1000 s: (15.0...23.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:
: NAVISTAR #
: 1817484C91

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at start of
delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RAB 9,7 e
 Edition : 21.09.92
 Replaces : 10.91
 Test oil : ISO-4113
 Combination no. : 0 400 846 588
 Injection pump
 Pump designation : PES6A95D420LS2804
 EP type number : 0 410 896 899
 Governor
 Governor design. : RQ200/1050AB1246-1R
 Governor no. : 0 420 201 652

Customer-spec. information
 Customer : RABA

Engine : D2156 HM6 UT

1st version kW : 162.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.80...1.90
 : (1.75...1.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.00...12.10

Del.quantity cm³/ : 11.9...12.1

100 s: (11.7...12.3)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 200.0

Rack travel in mm : 7.4...7.6

Del.quantity cm³/ : 1.1...1.5

100 s: (0.8...1.7)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 500

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 700

Del.quantity : 119.0...121.0

1000 : (117.0...123.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 500

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.00

Speed rpm : 1095...1110

2nd rack travel in: 4.00

Speed rpm : 1125...1155

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 200

Rack travel in mm : 6.5

Testing:

Speed rpm : 100

Minimum rack travel: 8.00

Speed rpm : 200

Rack travel in mm : 6.40...6.60

Rack travel in mm : 2.00

Speed rpm : 290...330

TORQUE CONTROL

Dimension a mm : 0.45

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 12.00...12.10

2nd speed rpm : 415

Rack travel in m: 13.10...13.50

3rd speed rpm : 680

Rack travel in m: 12.70...13.10

4th speed rpm : 835

Rack travel in m: 12.20...12.70

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : 700

Rack travel mm : 12.70...12.80

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 10.70...10.80

2nd pressure hPa : 260

Rack travel in m: 12.50...12.60

3rd pressure hPa : 180

Rack travel in m: 11.10...11.40

START CUT-OUT

Speed 1/min : 140 (160)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

Speed rpm : 600

Del.quantity cm³/ : 111.5...114.5

1000 s: (109.0...117.0)

Aneroid pressure h: -

Speed rpm : 500

G24

Del.quantity cm³/ : 74.0...76.0

1000 s: (72.0...78.0)

RACK STOP ADJUSTMENT

Speed rpm : 500

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00

Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 150.0...160.0

1000 s: (147.0...163.0)

Rack travel in mm : 17.50...17.70

Remarks:

:

Set idle stop at 200 min -1 to a control-rod travel of 6.5 mm

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA 5,9 e
 Edition : 21.09.92
 Replaces : 03.92
 Test oil : ISO-4113
 Combination no. : 0 400 846 597
 Injection pump
 Pump designation : PES6A90D410RS2813
 EP type number : 0 410 896 089
 Governor
 Governor design. : RQV300...1250AB1264L
 Governor no. : 0 420 212 233

Customer-spec. information
 Customer : IVECO-FIAT

Engine : 8065.25.000

1st version kW : 145.0
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 11.70...11.80

Del.quantity cm3/ : 7.9...8.0

100 s: (7.7...8.2)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 325.0

Rack travel in mm : 8.6...8.8

Del.quantity cm3/ : 1.3...1.7

100 s: (1.1...1.9)

Spread cm3 : 0.2

100 s: (0.4)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 0.60...1.10

2nd speed rpm : 445
 travel mm : 2.20...2.70

3rd speed rpm : 540
 travel mm : 2.80...3.30

4th speed rpm : 897
 travel mm : 5.00...5.50

5th speed rpm : 1324
 travel mm : 8.00...8.50

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1455

Rack travel in mm : 9.60...12.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h: 700

Del.quantity : 79.0...80.0

1000 : (77.0...82.0)

Spread cm³ : 3.00
1000 : (5.00)

RATED SPEED

1st version
Control lever
position degrees: 103...111

Testing:
1st rack travel in: 10.70
Speed rpm : 1310...1320
2nd rack travel in: 4.00
Speed rpm : 1415...1445
4th rack travel in: 1510
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 75...83

Testing:
Speed rpm : 225
Minimum rack travel: 12.10
Speed rpm : 325
Rack travel in mm : 8.60...8.80

CONSTANT REGULATION

Speed rpm : 350...450

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 11.70...11.80
2nd speed rpm : 400
Rack travel in m: 13.30...13.40
3rd speed rpm : 700
Rack travel in m: 12.60...12.80
4th speed rpm : 915
Rack travel in m: 11.90...12.20

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 400
Pressure hPa : 700
Rack travel mm : 12.90...13.00

Measurement

Speed 1/min : 400

1st pressure hPa : -
Rack travel in m: 10.80...10.90
2nd pressure hPa : 315
Rack travel in m: 11.60...11.70
3rd pressure hPa : 280
Rack travel in m: 12.00...12.20

START CUT-OUT

Speed 1/min : 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 700
Del. quantity cm³/ : 82.0...84.0
1000 s: (79.5...86.5)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 51.0...52.0
1000 s: (49.0...54.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 10.70
Speed rpm : 1310...1320

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 110.0...120.0
1000 s: (107.0...123.0)
Rack travel in mm : 19.50...21.00

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA
 Edition : 21.09.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 846 601
 Injection pump
 Pump designation : PES6A80D410RS2819
 EP type number : 0 410 886 064
 Governor
 Governor design. : RQV300...1250AB1262-
 2L
 Governor no. : 0 420 212 237

Customer-spec. information
 Customer : IVECO-FIAT

Engine : 8061.05.000

1st version kW : 117.0
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.75...2.85
 : (2.70...2.90)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 11.70...11.80

Del. quantity cm³/ : 6.0...6.1

100 s : (5.8...6.2)

Spread cm³ : 0.3

100 s : (0.4)

2nd speed rpm : 300.0

Rack travel in mm : 9.0...9.2

Del. quantity cm³/ : 0.8...1.4

100 s : (0.6...1.5)

Spread cm³ : 0.2

100 s : (0.4)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 0.70...1.20

2nd speed rpm : 350
 travel mm : 1.50...2.00

3rd speed rpm : 490
 travel mm : 2.90...3.40

4th speed rpm : 850
 travel mm : 5.10...5.60

5th speed rpm : 1290
 travel mm : 8.20...8.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1390

Rack travel in mm : 9.40...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del. quantity : 60.0...61.0

1000 : (58.5...62.5)

Spread cm³ : 3.00
1000 : (4.50)

RATED SPEED

1st version
Control lever
position degrees: 112...120

Testing:

1st rack travel in: 10.70
Speed rpm : 1280...1290
2nd rack travel in: 4.00
Speed rpm : 1395...1425
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 67...76

Testing:

Speed rpm : 200
Minimum rack travel: 10.60
Speed rpm : 300
Rack travel in mm : 9.00...9.20

TORQUE CONTROL

Dimension a mm : 0.90
Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 11.70...11.80
2nd speed rpm : 350
Rack travel in m: 12.70...12.80
3rd speed rpm : 700
Rack travel in m: 12.40...12.60
4th speed rpm : 950
Rack travel in m: 12.10...12.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700
Del.quantity cm³/ : 58.5...60.5
1000 s: (56.5...62.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.70
Speed rpm : 1280...1290

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 85.0...95.0
1000 s: (82.0...98.0)
Rack travel in mm : 19.50...21.00

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA
 Edition : 21.09.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 846 602
 Injection pump
 Pump designation : PES6A90D41ORS2813
 EP type number : 0 410 896 089
 Governor
 Governor design. : RQV300...1050AB1265-1L
 Governor no. : 0 420 212 239

Customer-spec. information
 Customer : IVECO-FIAT

Engine : 8065.25.099

1st version kW : 135.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder assembly : 0 681 343 009

Opening pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant. per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.75...2.85
 : (2.70...2.90)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.60...12.70

Del. quantity cm³/ : 7.5...7.6

100 s: (7.3...7.8)

Spread cm³ : 0.3

100 s: (0.4)

2nd speed rpm : 425.0

Rack travel in mm : 8.6...8.8

Del. quantity cm³/ : 0.6...1.0

100 s: (0.4...1.2)

Spread cm³ : 0.2

100 s: (0.4)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 380

travel mm : 1.60...2.10

2nd speed rpm : 430

travel mm : 2.30...2.80

3rd speed rpm : 460

travel mm : 2.60...3.10

4th speed rpm : 740

travel mm : 4.70...5.20

5th speed rpm : 1110

travel mm : 8.10...8.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1175

Rack travel in mm : 10.30...12.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 700

Del. quantity : 75.0...76.0

1000 : (73.0...78.0)

Spread cm³ : 3.00
1000 : (4.50)

RATED SPEED

1st version
Control lever
position degrees: 112...120

Testing:
1st rack travel in: 11.60
Speed rpm : 1095...1105
2nd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1320
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 76...84

Testing:
Speed rpm : 325
Minimum rack travel: 11.00
Speed rpm : 425
Rack travel in mm : 8.50...8.70

CONSTANT REGULATION
Speed rpm : 550...700

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.60...12.70
2nd speed rpm : 500
Rack travel in m: 13.90...14.00
3rd speed rpm : 800
Rack travel in m: 13.40...13.60
4th speed rpm : 920
Rack travel in m: 12.90...13.20

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 13.90...14.00

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 12.00...12.10
2nd pressure hPa : 520
Rack travel in m: 13.40...13.50
3rd pressure hPa : 440
Rack travel in m: 12.40...12.70

H02

START CUT-OUT

Speed 1/min : 340 (360)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 52.0...54.0
1000 s: (50.0...56.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.60
Speed rpm : 1095...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 100.0...110.0
1000 s: (97.0...113.0)
Rack travel in mm : 19.50...21.00

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA
 Edition : 21.09.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 846 605
 Injection pump
 Pump designation : PES6A90D410RS2823
 EP type number : 0 410 896 093
 Governor
 Governor design. : RQV300...1350AB1265-
 2L
 Governor no. : 0 420 212 240

Customer-spec. information
 Customer : IVECO-FIAT

Engine : 8060.25.679

1st version kW : 170.0
 Rated speed : 2650

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.75...2.85
 : (2.70...2.90)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1350

Rack travel in mm : 12.70...12.80

Del.quantity cm³/ : 8.1...8.2
 100 s: (7.9...8.4)

Spread cm³ : 0.3
 100 s: (0.4)

2nd speed rpm : 300.0
 Rack travel in mm : 8.8...9.0
 Del.quantity cm³/ : 0.9...1.3

100 s: (0.7...1.5)
 Spread cm³ : 0.2
 100 s: (0.4)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.00...1.50

2nd speed rpm : 460
 travel mm : 2.20...2.70

3rd speed rpm : 640
 travel mm : 3.20...3.70

4th speed rpm : 1015
 travel mm : 5.80...6.30

5th speed rpm : 1390
 travel mm : 8.20...8.70

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1490
 Rack travel in mm : 10.40...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1350
 Del.quantity : 81.0...82.0
 1000 : (79.0...84.0)

Spread cm³ : 3.00
1000 : (4.50)

RATED SPEED

1st version
Control lever
position degrees: 112...120

Testing:
1st rack travel in: 11.70
Speed rpm : 1380...1390
2nd rack travel in: 4.00
Speed rpm : 1540...1570
4th rack travel in: 1540
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 69...77

Testing:
Speed rpm : 200
Minimum rack travel: 9.60
Speed rpm : 300
Rack travel in mm : 8.80...9.00

CONSTANT REGULATION
Speed rpm : 325...475

TORQUE CONTROL
Dimension a mm : 1.00
Torque control curve - 1st version
1st speed rpm : 1350
Rack travel in m: 12.70...12.80
2nd speed rpm : 500
Rack travel in m: 13.70...13.80
3rd speed rpm : 800
Rack travel in m: 13.10...13.20
4th speed rpm : 900
Rack travel in m: 12.80...13.00

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 13.70...13.80

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.60...11.70
2nd pressure hPa : 520
Rack travel in m: 12.90...13.00
3rd pressure hPa : 440

H04

Rack travel in m: 12.50...12.80

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 800
Del. quantity cm³/ : 79.0...81.0
1000 s: (76.5...83.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.70
Speed rpm : 1380...1390

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 145.0...155.0
1000 s: (142.0...158.0)
Rack travel in mm : 19.50...21.00

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA
 Edition : 21.09.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 846 607
 Injection pump
 Pump designation : PES6A90D410RS2813
 EP type number : 0 410 896 089
 Governor
 Governor design. : RQV300...1050AB1265-3L
 Governor no. : 0 420 212 241
 Customer-spec. information
 Customer : IVECO-FIAT
 Engine : 8065.25.099
 1st version kW : 135.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42
 Overflow valve : 1 419 992 198
 Inlet press., bar : 1.50
 Test nozzle holder assembly : 0 681 343 009
 Opening pressure, bar : 172...175
 Test lines : 1 680 750 014
 Outside diameter x Wall thickness x Length mm : 6.00X2.00X600
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant. per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 2.75...2.85
 : (2.70...2.90)

H05

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050
 Rack travel in mm : 12.70...12.80
 Del.quantity cm³/ : 7.7...7.8
 100 s: (7.5...8.0)
 Spread cm³ : 0.3
 100 s: (0.4)
 2nd speed rpm : 425.0
 Rack travel in mm : 8.4...8.6
 Del.quantity cm³/ : 0.6...1.0
 100 s: (0.4...1.2)
 Spread cm³ : 0.2
 100 s: (0.4)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 380
 travel mm : 1.60...2.10
 2nd speed rpm : 430
 travel mm : 2.30...2.80
 3rd speed rpm : 460
 travel mm : 2.60...3.10
 4th speed rpm : 750
 travel mm : 4.80...5.30
 5th speed rpm : 1130
 travel mm : 8.00...8.50

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1175
 Rack travel in mm : 11.40...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1050
 Aneroid pressure h: 700
 Del.quantity : 77.5...78.5
 1000 : (75.5...80.5)

Spread cm³ : 3.00
1000 : (4.50)

RATED SPEED

1st version
Control lever
position degrees: 113...121

Testing:

1st rack travel in: 11.70
Speed rpm : 1120...1130
2nd rack travel in: 4.00
Speed rpm : 1220...1250
4th rack travel in: 1320
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 75...83

Testing:

Speed rpm : 325
Minimum rack travel: 11.00
Speed rpm : 425
Rack travel in mm : 8.40...8.60

CONSTANT REGULATION

Speed rpm : 460...610

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.70...12.80
2nd speed rpm : 500
Rack travel in m: 14.00...14.10
3rd speed rpm : 750
Rack travel in m: 13.70...13.80
4th speed rpm : 900
Rack travel in m: 13.10...13.30

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 14.00...14.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 12.70...12.80
2nd pressure hPa : 500
Rack travel in m: 13.80...13.90
3rd pressure hPa : 450
Rack travel in m: 13.20...13.50

H06

START CUT-OUT

Speed 1/min : 340 (360)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 750
Del. quantity cm³/ : 85.0...87.0
1000 s: (82.5...89.5)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 65.0...67.0
1000 s: (63.0...69.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 11.70
Speed rpm : 1120...1130

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 105.0...115.0
1000 s: (102.0...118.0)
Rack travel in mm : 19.50...21.00

Remarks:

:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF
 Edition : 27.11.92
 Replaces : 03.92
 Test oil : ISO-4113
 Combination no. : 0 400 846 608
 Injection pump
 Pump designation : PES6A95D320RS2796
 EP type number : 0 410 896 901
 Governor
 Governor design. : RQ300/1300AB1253-3R
 Governor no. : 0 420 201 654

Customer-spec. information
 Customer : DAF

Engine : NS 156G

1st version kw : 156.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
 : (1.95...2.15)

Rack travel in mm : 7.50...10.50

H07

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.80...12.90

Del.quantity cm³/ : 8.4...8.5

100 s : (8.2...8.7)

Spread cm³ : 0.3

100 s : (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del.quantity cm³/ : 0.6...1.0

100 s : (0.3...1.2)

Spread cm³ : 0.3

100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 770

Rack travel in mm : 7.50...8.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del.quantity : 84.5...85.5

1000 : (82.5...87.5)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 770

Rack travel in mm : 8.0

Testing:

1st rack travel in: 11.60

Speed rpm : 1325...1340

2nd rack travel in: 4.00

Speed rpm : 1410...1440

4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:

Speed rpm : 100
Minimum rack trave: 7.70
Speed rpm : 300
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.00
Speed rpm : 525...565

TORQUE CONTROL

Dimension a mm : 0.60
Torque control curve - 1st version
1st speed rpm : 1290
Rack travel in m: 12.60...12.70
2nd speed rpm : 750
Rack travel in m: 14.20...14.80
3rd speed rpm : 960
Rack travel in m: 13.50...14.10
4th speed rpm : 1055
Rack travel in m: 12.90...13.30

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 12.80...12.90

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 10.90...11.10
2nd pressure hPa : 250
Rack travel in m: 12.30...12.40
3rd pressure hPa : 90
Rack travel in m: 11.20...11.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 1290
Del.quantity cm³/ : 87.0...89.0
1000 s: (84.5...91.5)
Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm³/ : 45.5...46.5
1000 s: (43.5...48.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.60
Speed rpm : 1325...1340

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.40...6.60
Del.quantity cm³/ : 6.0...10.0
1000 s: (3.5...12.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 1 g 37
 Edition : 05.02.93
 Replaces : 05.89
 Test oil : ISO-4113

Combination no. : 0 400 864 072

Injection pump
 Pump designation : PES4A85D410/3RS2610
 EP type number : 0 410 884 951
 Governor
 Governor design. : RSV325...1200A2C2102
 -3L
 Governor no. : 0 420 232 508

Customer-spec. information
 Customer : KHD

Engine : F4L913

1st version kW : 59.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60
 : (2.45...2.65)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 10.30...10.40

Del. quantity cm³/ : 6.8...6.9

100 s: (6.6...7.1)

Spread cm³ : 0.3

100 s: (0.4)

2nd speed rpm : 325.0

Rack travel in mm : 7.6...7.8

Del. quantity cm³/ : 0.7...1.3

100 s: (0.5...1.5)

Spread cm³ : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del. quantity : 68.5...69.5

1000 : (66.5...71.5)

Spread cm³ : 3.00

1000 : (4.50)

RATED SPEED

1st version

Control lever

position degrees: 97...105

Testing:

1st rack travel in: 9.30

Speed rpm : 1240...1250

2nd rack travel in: 4.00

Speed rpm : 1290...1320

3rd rack travel in: 4.00

Speed rpm : 1305...1335
4th rack travel in: 1475
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 69...77

Setting point w/out bumper spring

Speed rpm : 325

Rack travel in mm : 7.2

Testing:

Speed rpm : 100

Minimum rack trave: 19.50

Speed rpm : 325

Rack travel in mm : 7.60...7.80

Rack travel in mm : 2.00

Speed rpm : 460...520

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1200

Rack travel in m: 10.30...10.40

2nd speed rpm : 750

Rack travel in m: 10.70...10.80

4th speed rpm : 835

Rack travel in m: 10.50...10.70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750

Del.quantity cm³/ : 59.5...61.5

1000 s: (57.0...64.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.30

Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 140.0...150.0

1000 s: (137.0...153.0)

Rack travel in mm : 19.50...21.00

Remarks:

: FENDT

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 1 o 7
 Edition : 05.02.93
 Replaces : 01.91
 Test oil : ISO-4113
 Combination no. : 0 400 864 085
 Injection pump
 Pump designation : PES4A85D410/3RS2799
 EP type number : 0 410 884 944
 Governor
 Governor design. : RSV325...1150A8C2239
 -3L
 Governor no. : 0 420 232 553

Customer-spec. information
 Customer : KHD

Engine : BF4L913

1st version kw : 74.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60
 : (2.45...2.65)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 11.70...11.80

Del. quantity cm³/ : 8.2...8.3

100 s: (8.0...8.5)

Spread cm³ : 0.3

100 s: (0.5)

2nd speed rpm : 325.0

Rack travel in mm : 7.4...7.6

Del. quantity cm³/ : 0.9...1.5

100 s: (0.7...1.7)

Spread cm³ : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del. quantity : 82.0...83.0

1000 : (80.0...85.0)

Spread cm³ : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 98...106

Testing:

1st rack travel in: 10.70

Speed rpm : 1190...1200

2nd rack travel in: 4.00

Speed rpm : 1215...1245

3rd rack travel in: 4.00

Speed rpm : 1240...1270
4th rack travel in: 1400
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 63...71
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 7.0

Testing:

Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 325
Rack travel in mm : 7.40...7.60
Rack travel in mm : 2.00
Speed rpm : 415...475

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 11.70...11.80
2nd speed rpm : 500
Rack travel in m: 12.00...12.20
4th speed rpm : 830
Rack travel in m: 11.80...12.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750
Del.quantity cm³/ : 79.5...81.5
1000 s: (77.0...84.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.70
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 17.60...18.00

Remarks:

:

APPLICATION

Excavator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM
 Edition : 18.12.92
 Replaces : 10.92
 Test oil : ISO-4113
 Combination no. : 0 400 864 094
 Injection pump
 Pump designation : PES4A90D320/3RS2743
 EF type number : 0 410 894 034
 Governor
 Governor design. : RSV325...1150A5C505-5R
 Governor no. : 0 420 233 289

Customer-spec. information
 Customer : MWM

Engine : TD226B-4

1st version kW : 63.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05
 : (2.90...3.10)

Rack travel in mm : 9.00...12.00
 Firing order : 1-3-4-2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...0.00
 & maximum rack tra: 21.00
 Difference ° CS : 3.50...4.50

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 9.50...9.60

Del.quantity cm³/ : 7.1...7.2

100 s: (6.9...7.4)

Spread cm³ : 0.3

100 s: (0.5)

2nd speed rpm : 325.0

Rack travel in mm : 6.6...6.8

Del.quantity cm³/ : 1.0...1.6

100 s: (0.8...1.8)

Spread cm³ : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 71.5...72.5

1000 : (69.5...74.5)

Spread cm³ : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 96...104

Testing:
1st rack travel in: 8.50
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1210...1240
3rd rack travel in: 4.00
Speed rpm : 1230...1260
4th rack travel in: 1330
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 65...73
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 6.2

Testing:
Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 325
Rack travel in mm : 6.60...6.80
Rack travel in mm : 2.00
Speed rpm : 415...475

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 9.50...9.60
2nd speed rpm : 500
Rack travel in m: 9.50...9.70

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 500
Del. quantity cm³/ : 55.0...57.0
1000 s: (52.5...59.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 8.50
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 138.0...148.0
1000 s: (135.0...151.0)
Rack travel in mm : 19.50...21.00

Remarks:
:

APPLICATION

Excavator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
 Edition : 11.01.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 864 095
 Injection pump
 Pump designation : PES4A95D410/3RS2789
 EP type number : 0 410 894 995
 Governor
 Governor design. : RSV325...1175A5C2163
 -7L
 Governor no. : 0 420 232 590

Customer-spec. information
 Customer : KHD

Engine : F4L913

1st version kw : 55.0
 Rated speed : 2350

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10
 : (2.95...3.15)

Rack travel in mm : 9.00...12.00
 Firing order : 1-3-4-2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1175

Rack travel in mm : 11.90...12.00

Del.quantity cm³/ : 7.4...7.6

100 s: (7.2...7.8)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 325.0

Rack travel in mm : 9.3...9.5

Del.quantity cm³/ : 1.0...1.6

100 s: (0.7...1.8)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1175

Del.quantity : 74.5...76.5

1000 : (72.5...78.5)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 97...105

Testing:

1st rack travel in: 10.90

Speed rpm : 1215...1225

2nd rack travel in: 4.00

Speed rpm : 1265...1295

3rd rack travel in: 4.00

Speed rpm : 1280...1310
4th rack travel in: 1430
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 65...73
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 8.9

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 325
Rack travel in mm : 9.30...9.50
Rack travel in mm : 2.00
Speed rpm : 470...530

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1175
Rack travel in m: 11.90...12.00
2nd speed rpm : 800
Rack travel in m: 12.30...12.40
3rd speed rpm : 1025
Rack travel in m: 12.10...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800
Del.quantity cm³/ : 69.0...72.0
1000 s: (66.5...74.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.90
Speed rpm : 1215...1225

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 19.50...21.00

Remarks:

: DX3.75

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 6,1 r
 Edition : 11.01.93
 Replaces : 05.90
 Test oil : ISO-4113
 Combination no. : 0 400 866 125
 Injection pump
 Pump designation : PES6A85D410/3RS2761
 EP type number : 0 410 886 895
 Governor
 Governor design. : RSV325...1150A8C674-
 1L
 Governor no. : 0 420 232 518

Customer-spec. information
 Customer : KHD

Engine : BF6L913

1st version kw : 112.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60
 : (2.45...2.65)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 12.10...12.20

Del. quantity cm³/ : 8.4...8.5

100 s: (8.2...8.7)

Spread cm³ : 0.3

100 s: (0.5)

2nd speed rpm : 325.0

Rack travel in mm : 7.5...7.7

Del. quantity cm³/ : 0.9...1.5

100 s: (0.7...1.7)

Spread cm³ : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 700

Del. quantity : 84.5...85.5

1000 : (82.5...87.5)

Spread cm³ : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 99...107

Testing:

1st rack travel in: 11.10

Speed rpm : 1190...1200

2nd rack travel in: 4.00

Speed rpm : 1225...1255

3rd rack travel in: 4.00
Speed rpm : 1240...1270
4th rack travel in: 1410
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position, degrees: 63...71
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 7.1

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 325
Rack travel in mm : 7.00...7.20
Rack travel in mm : 2.00
Speed rpm : 430...490

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 12.10...12.20
2nd speed rpm : 500
Rack travel in m: 12.60...12.70
3rd speed rpm : 855
Rack travel in m: 12.40...12.60

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 11.50...11.60

Measurement

Speed 1/min : 500
1st pressure hPa : 350
Rack travel in m: 11.90...12.00
3rd pressure hPa : 700
Rack travel in m: 12.60...12.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 750
Del. quantity cm³/ : 87.0...89.0
1000 s: (84.5...91.5)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 64.5...65.5
1000 s: (62.5...67.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.10
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 115.0...125.0
1000 s: (112.0...128.0)
Rack travel in mm : 17.00...17.40

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VMA 6,0 a
Edition : 21.09.92
Replaces : 01.90
Test oil : ISO-4113
Combination no. : 0 400 866 156
Injection pump
Pump designation : PES6A90D320/3RS2785
EP type number : 0 410 896 088
Governor
Governor design. : RSV350...1300A2C2242
R
Governor no. : 0 420 233 259

Customer-spec. information
Customer : VM

Engine : SUN 6105 UND ..T

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05
: (2.90...3.10)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
Tolerance + - ° : 0.50 (0.75)
Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1200
Rack travel in mm : 12.00...12.10
Del.quantity cm3/ : 9.4...9.5
100 s: (9.2...9.7)
Spread cm3 : 0.3
100 s: (0.5)

2nd speed rpm : 350.0
Rack travel in mm : 7.2...7.4
Del.quantity cm3/ : 1.2...1.8
100 s: (1.0...2.0)
Spread cm3 : 0.2
100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1200
Del.quantity : 94.5...95.5
1000 : (92.5...97.5)
Spread cm3 : 3.00
1000 : (5.00)

RATED SPEED

1st version
Control lever
position degrees: 95...103

Testing:
1st rack travel in: 11.00
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1385...1415
3rd rack travel in: 4.00
Speed rpm : 1415...1445

4th rack travel in: 1580
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 64...72
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.8

Testing:
Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 350
Rack travel in mm : 7.20...7.40
Rack travel in mm : 2.00
Speed rpm : 530...590

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 12.00...12.10
2nd speed rpm : 550
Rack travel in m: 12.10...12.20
5th speed rpm : 400
Rack travel in m: 13.20...13.80

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.00
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...110.0
1000 s: (97.0...113.0)
Rack travel in mm : 19.50...21.00

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM
 Edition : 11.01.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 866 179
 Injection pump
 Pump designation : PES6A100D320/3RS2591
 EP type number : 9 410 230 025
 Governor
 Governor design. : RSV550...1100AOC2238
 -2R
 Governor no. : 0 420 233 296

Customer-spec. information
 Customer : C.D.C.

Engine : 6CTA-830

1st version kW : 157.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.70...12.80

Del. quantity cm³/ : 12.3...12.5

100 s: (12.1...12.7)

Spread cm³ : 0.4

100 s: (0.6)

2nd speed rpm : 550.0

Rack travel in mm : 5.6...5.8

Del. quantity cm³/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm³ : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del. quantity : 123.0...125.0

1000 : (121.0...127.0)

Spread cm³ : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 43...51

Testing:

1st rack travel in: 11.70
Speed rpm : 1165...1175
2nd rack travel in: 4.00
Speed rpm : 1225...1235
3rd rack travel in: 4.00
Speed rpm : 1225...1255
4th rack travel in: 1400
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 25...33
Setting point w/out bumper spring
Speed rpm : 550
Rack travel in mm : 5.2

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 550
Rack travel in mm : 5.60...5.80

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.70...12.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.70...10.90
2nd pressure hPa : 340
Rack travel in m: 11.20...11.30
3rd pressure hPa : 465
Rack travel in m: 12.00...12.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 80.0...82.0
1000 s: (78.0...84.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 1165...1175

H22

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...155.0
1000 s: (130.0...160.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 550
Rack travel in mm : 5.60...5.80
Del.quantity cm³/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm³ : 6.00
1000 s: (8.00)

Remarks:

: C.D.C. # 3923479

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VAL 3,3 b
 Edition : 21.09.92
 Replaces : 03.91
 Test oil : ISO-4113
 Combination no. : 0 400 873 040
 Injection pump
 Pump designation : PES3A95D32GRS2810
 EP type number : 0 410 893 997
 Governor
 Governor design. : RSV375...1175A2C2178
 -10R
 Governor no. : 0 420 233 281.

Customer-spec. information
 Customer : VALMET

Engine : 320 DS

1st version kW : 55.0
 Rated speed : 2350

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60
 : (2.45...2.65)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 2- 3

Phasing : 0-120-240

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50
 & maximum rack tra: 21.00
 Difference ° CS : 4.50...5.50

BASIC SETTING

1st speed rpm : 1175

Rack travel in mm : 10.70...10.80

Del. quantity cm³/ : 8.5...8.7

100 s : (8.3...8.9)

Spread cm³ : 0.3

100 s : (0.6)

2nd speed rpm : 375.0

Rack travel in mm : 4.2...4.4

Del. quantity cm³/ : 0.8...1.5

100 s : (0.5...1.7)

Spread cm³ : 0.3

100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1175

Del. quantity : 85.5...87.5

1000 : (83.5...89.5)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 97...106

Testing:

1st rack travel in: 9.70
Speed rpm : 1215...1225
2nd rack travel in: 4.00
Speed rpm : 1270...1300
3rd rack travel in: 4.00
Speed rpm : 1275...1305
4th rack travel in: 1440
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 71...79
Setting point w/out bumper spring
Speed rpm : 375
Rack travel in mm : 3.8

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 375
Rack travel in mm : 4.20...4.40
Rack travel in mm : 2.00
Speed rpm : 420...480

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1175
Rack travel in m: 10.70...10.80
2nd speed rpm : 500
Rack travel in m: 11.30...11.40
4th speed rpm : 990
Rack travel in m: 10.80...11.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm³/ : 73.5...76.5
1000 s: (71.0...79.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.70
Speed rpm : 1215...1225

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 200.0...210.0
1000 s: (197.0...213.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 375
Rack travel in mm : 4.20...4.40
Del.quantity cm³/ : 8.0...15.0
1000 s: (5.5...17.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE 5,6 a
Edition : 27.11.92
Replaces : 05.92
Test oil : ISO-4113

Combination no. : 0 400 874 238

Injection pump
Pump designation : PES4A95D410RS2685
EP type number : 0 410 894 996
Governor
Governor design. : RSV400...1000A1C2187

Governor no. : 0 420 232 387

Customer-spec. information
Customer : LIEBHERR

Engine : D904 NA

1st version kW : 90.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.70...2.80
: (2.65...2.85)

Rack travel in mm : 9.00...12.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50
& maximum rack tra: 21.00
Difference * CS : 4.00...5.00

BASIC SETTING

1st speed rpm : 975

Rack travel in mm : 12.20...12.30

Del. quantity cm³/ : 11.9...12.1

100 s: (11.7...12.3)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 415.0

Rack travel in mm : 6.6...6.8

Del. quantity cm³/ : 1.7...2.1

100 s: (1.4...2.3)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 975

Del. quantity : 119.0...121.0

1000 : (117.0...123.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 90...98

Testing:
1st rack travel in: 11.20
Speed rpm : 1020...1030
2nd rack travel in: 4.00
Speed rpm : 1035...1065
3rd rack travel in: 4.00
Speed rpm : 1075...1095
4th rack travel in: 1230
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 65...73
Setting point w/out bumper spring
Speed rpm : 415
Rack travel in mm : 6.2

Testing:
Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 415
Rack travel in mm : 6.60...6.80
Rack travel in mm : 2.00
Speed rpm : 535...595

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 975
Rack travel in m: 12.20...12.30
2nd speed rpm : 500
Rack travel in m: 12.20...12.40

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.20
Speed rpm : 1020...1030

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 415
Rack travel in mm : 6.60...6.80
Del.quantity cm3/ : 17.0...21.0
1000 s: (14.5...23.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE 5,6 a15
 Edition : 27.11.92
 Replaces : 10.92
 Test oil : ISO-4113
 Combination no. : 0 400 874 238R
 Injection pump
 Pump designation : PES4A95D410RS2685
 EP type number : 0 410 894 996
 Governor
 Governor design. : RSV400...1000A1C2187
 L
 Governor no. : 0 420 232 387

Customer-spec. information
 Customer : LIEBHERR

Engine : D904 T

1st version kW : 90.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 2.70...2.80
 : (2.65...2.85)

H27

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50
 & maximum rack tra: 21.00
 Difference ° CS : 4.00...5.00

BASIC SETTING

1st speed rpm : 975
 Rack travel in mm : 12.20...12.30
 Del. quantity cm³/ : 11.9...12.1
 100 s: (11.7...12.3)
 Spread cm³ : 0.3
 100 s: (0.6)

2nd speed rpm : 415.0
 Rack travel in mm : 6.6...6.8
 Del. quantity cm³/ : 1.7...2.1
 100 s: (1.4...2.3)
 Spread cm³ : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 975
 Del. quantity : 119.0...121.0
 1000 : (117.0...123.0)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 90...98

Testing:
1st rack travel in: 11.20
Speed rpm : 1020...1030
2nd rack travel in: 4.00
Speed rpm : 1035...1065
3rd rack travel in: 4.00
Speed rpm : 1075...1095
4th rack travel in: 1230
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 65...73
Setting point w/out bumper spring
Speed rpm : 415
Rack travel in mm : 6.2

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 415
Rack travel in mm : 6.60...6.80
Rack travel in mm : 2.00
Speed rpm : 535...595

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 975
Rack travel in m: 12.20...12.30
2nd speed rpm : 500
Rack travel in m: 12.80...13.00
3rd speed rpm : 800
Rack travel in m: 12.80...13.00
4th speed rpm : 900
Rack travel in m: 12.40...12.60

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm³/ : 114.0...120.0
1000 s: (111.5...122.5)
Speed rpm : 800
Del.quantity cm³/ : 125.5...128.5
1000 s: (123.0...131.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.20
Speed rpm : 1020...1030

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 415
Rack travel in mm : 6.60...6.80
Del.quantity cm³/ : 17.0...21.0
1000 s: (14.5...23.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VAL 4.4 c
 Edition : 21.09.92
 Replaces : 02.91
 Test oil : ISO-4113
 Combination no. : 0 400 874 250
 Injection pump
 Pump designation : PES4A95D32ORS2807
 EP type number : 0 410 894 994
 Governor
 Governor design. : RSV375...1125A2C2178
 -7R
 Governor no. : 0 420 233 279

Customer-spec. information
 Customer : VALMET

Engine : 420 DS

1st version kw : 75.0
 Rated speed : 2250

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60
 : (2.45...2.65)

Rack travel in mm : 9.00...12.00
 Firing order : 1-2-4-3

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50
 & maximum rack tra: 21.00
 Difference ° CS : 4.50...5.50

BASIC SETTING

1st speed rpm : 1125

Rack travel in mm : 11.20...11.30

Del. quantity cm³/ : 8.6...8.8

100 s: (8.4...9.0)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 375.0

Rack travel in mm : 5.5...5.7

Del. quantity cm³/ : 1.8...2.4

100 s: (1.5...2.6)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1125

Del. quantity : 86.5...88.5

1000 : (84.5...90.5)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 97...105

Testing:

1st rack travel in: 10.20
Speed rpm : 1165...1175
2nd rack travel in: 4.00
Speed rpm : 1235...1265
3rd rack travel in: 4.00
Speed rpm : 1245...1275
4th rack travel in: 1410
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 71...79
Setting point w/out bumper spring
Speed rpm : 375
Rack travel in mm : 5.1

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 375
Rack travel in mm : 5.50...5.70
Rack travel in mm : 2.00
Speed rpm : 465...525

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1125
Rack travel in m: 11.20...11.30
2nd speed rpm : 500
Rack travel in m: 11.50...11.60
4th speed rpm : 965
Rack travel in m: 11.20...11.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750
Del.quantity cm³/ : 86.0...89.0
1000 s: (83.5...91.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.20
Speed rpm : 1165...1175

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 195.0...205.0
1000 s: (192.0...208.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 375
Rack travel in mm : 5.50...5.70
Del.quantity cm³/ : 18.0...24.0
1000 s: (15.5...26.5)
Spread cm³ : 3.50
1000 s: (5.00)

Remarks:

:

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FB 5,7 m 10
 Edition : 27.11.92
 Replaces : 09.92
 Test oil : ISO-4113

Combination no. : 0 400 876 188

Injection pump
 Pump designation : PES6A80D410RS2085X
 EP type number : 0 410 886 045
 Governor
 Governor design. : RSV350...1400A2C1052
 L
 Governor no. : 0 420 232 406

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM352

1st version kw : 80.9
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Prestroke mm : 2.15...2.25
 : (2.10...2.30)
 Rack travel in mm : 9.00...12.00

J03

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 9.00...9.10

Del.quantity cm³/ : 5.2...5.3
 100 s : (5.0...5.4)

Spread cm³ : 0.2
 100 s : (0.4)

2nd speed rpm : 350.0
 Rack travel in mm : 6.4...7.0
 Del.quantity cm³/ : 1.0...1.2
 100 s : (0.8...1.3)

Spread cm³ : 0.2
 100 s : (0.3)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 5.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1400
 Del.quantity : 52.0...53.0
 1000 : (50.5...54.5)

Spread cm³ : 2.50
 1000 : (4.00)

RATED SPEED

1st version
 Control lever
 position degrees: 108...116

Testing:
 1st rack travel in: 8.00
 Speed rpm : 1450...1455
 2nd rack travel in: 4.00
 Speed rpm : 1488...1501
 3rd rack travel in: 4.00
 Speed rpm : 1515...1545

4th rack travel in: 1680
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 54...62
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.7

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 350
Rack travel in mm : 6.60...6.80
Rack travel in mm : 2.00
Speed rpm : 500...560

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 9.00...9.10
2nd speed rpm : 500
Rack travel in m: 9.90...10.00
3rd speed rpm : 850
Rack travel in m: 9.50...9.70
4th speed rpm : 950
Rack travel in m: 9.10...9.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm³/ : 47.0...49.0
1000 s: (45.0...51.0)
Speed rpm : 850
Del.quantity cm³/ : 48.5...51.5
1000 s: (46.5...53.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.00
Speed rpm : 1450...1455

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 14.20...14.60

LOW IDLE

Speed rpm : 350

J04

Rack travel in mm : 6.40...7.00
Del.quantity cm³/ : 10.0...12.0
1000 s: (8.5...13.5)
Spread cm³ : 2.00
1000 s: (3.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 9,6 k 1
 Edition : 31.07.92
 Replaces : 9.85
 Test oil : ISO-4113
 Combination no. : 0 400 876 198
 Injection pump
 Pump designation : PES6A95D410RS2416
 EP type number : 0 410 896 961
 Governor
 Governor design. : RSV300...1150A8C616
 DL
 Governor no. : 0 420 232 323

Customer-spec. information
 Customer : KHD

Engine : F6L413FR

1st version kW : 140.0
 Rated speed : 2300
 2nd version kW : 106.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42
 Overflow valve : 1 419 992 198
 Inlet press., bar : 1.50
 Test nozzle holder assembly : 0 681 343 009
 Opening pressure, bar : 172...175
 Test lines : 1 680 750 014
 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
 : (1.85...2.05)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1140
 Rack travel in mm : 10.00...10.10
 Del.quantity cm3/ : 9.8...10.0
 100 s: (9.6...10.2)
 Spread cm3 : 0.3
 100 s: (0.6)

2nd speed rpm : 300.0
 Rack travel in mm : 5.9...6.1
 Del.quantity cm3/ : 1.4...2.0
 100 s: (1.1...2.2)
 Spread cm3 : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 5.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1140
 Del.quantity : 98.0...100.0
 1000 : (96.0...102.0)
 Spread cm3 : 3.50
 1000 : (6.00)
 2nd version
 Speed rpm : 1140
 Del.quantity cm3/ : 76.0...77.0
 1000 s: (74.0...79.0)
 Spread cm3 : 3.0
 1000 s: (6.0)

RATED SPEED

1st version

Control lever
position degrees: 104...112

Testing:
1st rack travel in: 9.00
Speed rpm : 1180...1190
2nd rack travel in: 4.00
Speed rpm : 1215...1245
3rd rack travel in: 4.00
Speed rpm : 1250...1280
4th rack travel in: 1410
Speed rpm : 0.30...1.40

2nd version
Control lever
position degrees: 51...59

Testing:
1st rack travel in: 7.20
Speed rpm : 1180...1190
2nd rack travel in: 4.00
Speed rpm : 1215...1245
4th rack travel in: 1325
Speed rpm : 0.30...1.70

LOW IDLE 1
Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.5

Testing:
Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 300
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 535...595

TORQUE CONTROL
Dimension a mm : 0.40
Torque control curve - 1st version
1st speed rpm : 1140
Rack travel in m: 10.00...10.10
2nd speed rpm : 500
Rack travel in m: 10.40...10.50
4th speed rpm : 750
Rack travel in m: 10.20...10.30

Torque control curve - 2nd version
1st speed rpm : 1140
Rack travel in m: 8.20...8.30
2nd speed rpm : 500
Rack travel in m: 9.10...9.20
3rd speed rpm : 750
Rack travel in m: 8.90...9.10
4th speed rpm : 900
Rack travel in m: 8.40...8.60

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 650
Del.quantity cm³/ : 93.5...96.5
1000 s: (91.0...99.0)

2nd version
Speed rpm : -
Del.quantity cm³/ : -
1000 s: -
Spread cm³ : -
1000 s: -

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.00
Speed rpm : 1180...1190

2nd version
1mm rack travel less than
full load rack tr: 7.20
Speed rpm : 1180...1190

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 15.80...16.20

Speed rpm : 100
Del.quantity cm³/ : 111.5...121.5
1000 s: (108.5...124.5)
Rack travel in mm : 13.6...14.0

Remarks:

APPLICATION

Installation 2300

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 9,6 K 2
 Edition : 31.07.92
 Replaces : 03.87
 Test oil : ISO-4113
 Combination no. : 0 400 876 199
 Injection pump
 Pump designation : PES6A95D410RS2416
 EP type number : 0 410 896 961
 Governor
 Governor design. : RSV300...750A7C616L
 Governor no. : 0 420 232 322

Customer-spec. information
 Customer : KHD

Engine : F6L413FR

1st version kW : 110.0
 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
 : (1.95...2.05)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 9.20...9.30

Del.quantity cm³/ : 7.6...7.7

100 s: (7.4...7.9)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del.quantity cm³/ : 1.3...1.9

100 s: (1.0...2.1)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Del.quantity : 76.0...77.0

1000 : (74.0...79.0)

Spread cm³ : 3.00

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 92...100

Testing:

1st rack travel in: 8.20

Speed rpm : 780...790

2nd rack travel in: 4.00

Speed rpm : 790...820

4th rack travel in: 930

Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever

position degrees: 69...77

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 6.0

Testing:

Speed rpm : 100

Minimum rack trave: 19.50

Speed rpm : 300

Rack travel in mm : 6.40...6.60

Rack travel in mm : 2.00

Speed rpm : 470...530

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 750

Rack travel in m: 9.20...9.30

2nd speed rpm : 600

Rack travel in m: 9.80...9.90

3rd speed rpm : 350

Rack travel in m: 9.90...10.30

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.20

Speed rpm : 780...790

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 111.5...121.5

1000 s: (108.5...124.5)

Rack travel in mm : 13.50...14.10

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE
Edition : 18.12.91
Replaces : 9.76
Test oil : ISO-4113
Combination no. : 0 400 876 247
Injection pump
Pump designation : PES6A95D410RS2500
EP type number : 0 410 896 946
Governor
Governor design. : RSV400...1100A7B772L
Governor no. : 0 420 232 209

Customer-spec. information
Customer : JOHN DEERE

Engine : 6404 T

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42
Overflow valve : W 187 000 000
Inlet press., bar : 1.50
Test nozzle holder assembly : 0 681 343 009
Opening pressure, bar : 172...175
Test lines : 1 680 750 008
Outside diameter x Wall thickness x Length mm : 6.00x2.00x600
(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Prestroke mm : 1.90...2.00
: (1.85...2.05)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
Tolerance + - ° : 0.50 (0.75)
Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1080
Rack travel in mm : 10.00...10.10
Del.quantity cm3/ : 8.5...8.7
100 s : (8.3...8.9)
Spread cm3 : 0.3
2nd speed rpm : 400.0
Rack travel in mm : 5.9...6.1
Del.quantity cm3/ : 1.2...1.7
100 s : (0.9...1.9)
Spread cm3 : 0.3

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...1.00

Governor spring pre-tension
Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1080
Del.quantity : 85.5...87.5
1000 : (83.5...89.5)
Spread cm3 : 3.00

RATED SPEED

1st version
Control lever
position degrees: 66...74

Testing:
1st rack travel in: 9.00
Speed rpm : 1110...1120
2nd rack travel in: 5.00
Speed rpm : 1135...1140
4th rack travel in: 1250
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 25...33
Setting point w/out bumper spring
Speed rpm : 400

Rack travel in mm : 5.5

delivery of cylinder 1

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 400
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 510...570
Speed rpm : 650
Maximum rack trave: 1.00

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 10.00...10.10
2nd speed rpm : 400
Rack travel in m: 10.00...10.20
3rd speed rpm : 300
Rack travel in m: 10.70...11.30

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.00
Speed rpm : 1110...1120

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 156.5...176.5
1000 s: (153.5...179.5)
Rack travel in mm : 19.00...21.00

HIGH IDLE

1st version
Speed rpm : 1150
Rack travel in mm : 4.50...4.70
Del.quantity cm³/ : 14.0...20.0
1000 s: (13.0...21.0)
Spread cm³ : 4.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.90...6.10
Del.quantity cm³/ : 12.0...17.0
1000 s: (9.5...19.5)
Spread cm³ : 3.00

Remarks:

:

Start-of-delivery mark at 14° angular displacement of the cam after start of

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE
 Edition : 18.12.91
 Replaces : 9.76
 Test oil : ISO-4113
 Combination no. : 0 400 876 248
 Injection pump
 Pump designation : PES6A95D41ORS2500
 EP type number : 0 410 896 946
 Governor
 Governor design. : RSV400...1200A2B773D
 L
 Governor no. : 0 420 234 349

Customer-spec. information
 Customer : JOHN DEERE

Engine : 6404 T

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : W 187 000 000
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 0 681 343 009
 Opening
 pressure, bar : 172...175
 Test lines : 1 680 750 008
 Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Prestroke mm : 1.90...2.00
 : (1.85...2.05)
 Rack travel in mm : 9.00...12.00
 Firing order : 1-5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1200
 Rack travel in mm : 9.70...9.80
 Del. quantity cm³/ : 8.5...8.7
 100 s : (8.3...8.9)
 Spread cm³ : 0.3
 2nd speed rpm : 400.0
 Rack travel in mm : 5.7...5.9
 Del. quantity cm³/ : 1.2...1.7
 100 s : (0.9...1.9)
 Spread cm³ : 0.3

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...1.00

Governor spring pre-tension
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1200
 Del. quantity : 85.5...87.5
 1000 : (83.5...89.5)
 Spread cm³ : 3.00

RATED SPEED

1st version
 Control lever
 position degrees: 41...49

Testing:
 1st rack travel in: 8.70
 Speed rpm : 1240...1250
 2nd rack travel in: 5.00
 Speed rpm : 1280...1285
 4th rack travel in: 1450
 Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
 position degrees: 15...23
 Setting point w/out bumper spring

Speed rpm : 400
Rack travel in mm : 5.3

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 400
Rack travel in mm : 5.70...5.90
Rack travel in mm : 2.00
Speed rpm : 580...640
Speed rpm : 750
Maximum rack trave: 1.00

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 9.70...9.80
2nd speed rpm : 800
Rack travel in m: 10.30...10.40
3rd speed rpm : 600
Rack travel in m: 10.30...10.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800
Del.quantity cm3/ : 92.0...95.0
1000 s: (89.5...97.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.70
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 156.5...176.5
1000 s: (153.5...179.5)
Rack travel in mm : 19.00...21.00

HIGH IDLE

1st version

Speed rpm : 1295
Rack travel in mm : 5.90...6.10
Del.quantity cm3/ : 21.0...27.0
1000 s: (20.0...28.0)
Spread cm3 : 4.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.70...5.90

Del.quantity cm3/ : 12.0...17.0
1000 s: (9.5...19.5)
Spread cm3 : 3.00

Remarks:

Start-of-delivery mark at 14° angular displacement of the cam after start of delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 6,6 h 2
Edition : 18.12.91
Replaces : 08.89
Test oil : ISO-4113

Combination no. : 0 400 876 249

Injection pump
Pump designation : PES6A95D410RS2500
EP type number : 0 410 896 946
Governor
Governor design. : RSV600...1100A2B774L
Governor no. : 0 420 232 210

Customer-spec. information
Customer : JOHN DEERE

Engine : 6404 T

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : W 187 000 000

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Prestroke mm : 1.90...2.00
 : (1.85...2.05)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 9.80...9.90

Del. quantity cm³/ : 7.9...8.1

100 s : (7.7...8.3)

Spread cm³ : 0.3

2nd speed rpm : 600.0

Rack travel in mm : 5.2...5.4

Del. quantity cm³/ : 1.2...1.7

100 s : (0.9...1.9)

Spread cm³ : 0.3

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del. quantity : 79.5...81.5

1000 : (77.5...83.5)

Spread cm³ : 3.00

1000 : (-)

RATED SPEED

1st version

Control lever

position degrees: 36...44

Testing:

1st rack travel in: 8.80

Speed rpm : 1140...1150

2nd rack travel in: 5.00

Speed rpm : 1165...1170

4th rack travel in: 1300

Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever

position degrees: 16...24

Setting point w/out bumper spring

Speed rpm : 600
Rack travel in mm : 4.8

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 600
Rack travel in mm : 5.20...5.40
Rack travel in mm : 2.00
Speed rpm : 670...730
Speed rpm : 850
Maximum rack trave: 1.00

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 9.80...9.90
2nd speed rpm : 500
Rack travel in m: 9.80...10.00
3rd speed rpm : 400
Rack travel in m: 10.50...11.10

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 8.80
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 156.5...176.5
1000 s: (153.5...179.5)
Rack travel in mm : 19.00...21.00

HIGH IDLE

1st version
Speed rpm : 1200
Rack travel in mm : 4.90...5.10
Del.quantity cm³/ : 21.0...27.0
1000 s: (20.0...28.0)
Spread cm³ : 4.00
1000 s: (-)

LOW IDLE

Speed rpm : 600
Rack travel in mm : 5.20...5.40
Del.quantity cm³/ : 12.0...17.0
1000 s: (9.5...19.5)
Spread cm³ : 3.00
1000 s: (-)

Remarks:

:

Start-of-delivery mark at 14° angular displacement of the cam after start of delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 j 3
 Edition : 11.01.93
 Replaces : 07.91
 Test oil : ISO-4113

Combination no. : 0 400 876 388

Injection pump
 Pump designation : PES6A95D410RS2797
 EP type number : 0 410 896 900
 Governor
 Governor design. : RSV350...1200A1C1154
 -2L
 Governor no. : 0 420 232 561

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 366

1st version kW : 81.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 9.80...9.90

Del.quantity cm3/ : 5.4...5.6

100 s: (5.2...5.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 9.4...10.0

Del.quantity cm3/ : 0.8...1.4

100 s: (0.5...1.6)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del.quantity : 54.5...56.5

1000 : (52.5...58.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 108...116

Testing:

1st rack travel in: 8.80

Speed rpm : 1240...1245

2nd rack travel in: 4.00

Speed rpm : 1263...1280

3rd rack travel in: 4.00

Speed rpm : 1300...1330
4th rack travel in: 1400
Speed rpm : 0.30...1.40
5th rack travel in: 1255...1265
Speed rpm : 8.80

Unimog

LOW IDLE 1

Control lever
position degrees: -3
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 9.70

Testing:

Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 350
Rack travel in mm : 9.40...10.00
Rack travel in mm : 2.00
Speed rpm : 495...555

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 9.80...9.90
2nd speed rpm : 500
Rack travel in m: 11.10...11.30
3rd speed rpm : 850
Rack travel in m: 10.40...10.60

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm³/ : 48.0...51.0
1000 s: (45.5...53.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.80
Speed rpm : 1240...1245

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 80.0...90.0
1000 s: (77.0...93.0)
Rack travel in mm : 15.50...15.90

Remarks:

:

APPLICATION

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : AIF
 Edition : 18.12.92
 Replaces : 03.92
 Test oil : ISO-4113
 Combination no. : 0 400 876 393
 Injection pump
 Pump designation : PES6A90D410RS2723
 EP type number : 0 410 896 085
 Governor
 Governor design. : RSV300...1350A0C2257
 Governor no. : 0 420 232 568

Customer-spec. information
 Customer : IVECO-AIFO

Engine : 8061.3RM 25

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 419 992 198
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 0 681 343 009
 Opening
 pressure, bar : 172...175
 Test lines : 1 680 750 014
 Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 2.20...2.30
 : (2.15...2.35)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1350
 Rack travel in mm : 13.60...13.70
 Del. quantity cm³/ : 10.9...11.0
 100 s: (10.7...11.2)
 Spread cm³ : 0.3
 100 s: (0.4)

2nd speed rpm : 300.0
 Rack travel in mm : 9.0...9.2
 Del. quantity cm³/ : 2.3...2.7
 100 s: (2.1...2.9)
 Spread cm³ : 0.2
 100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1350
 Del. quantity : 109.0...110.0
 1000 : (107.0...112.0)
 Spread cm³ : 3.00
 1000 : (4.50)

RATED SPEED

1st version
 Control lever
 position degrees: 100...108

Testing:
 1st rack travel in: 12.70
 Speed rpm : 1390...1400
 2nd rack travel in: 4.00
 Speed rpm : 1595...1625
 4th rack travel in: 1700
 Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 74...82

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 5.5

Speed rpm : 300

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00

Speed rpm : 525...585

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1350

Rack travel in m: 13.60...13.70

2nd speed rpm : 500

Rack travel in m: 13.60...13.80

5th speed rpm : 350

Rack travel in m: 15.10...15.30

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500

Del. quantity cm³/ : 97.0...99.0

1000 s: (94.5...101.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.70

Speed rpm : 1390...1400

STARTING FUEL DELIVERY

Speed rpm : 100

Del. quantity cm³/ : 120.0...130.0

1000 s: (117.0...133.0)

Rack travel in mm : 17.20...17.60

Remarks:

:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FOR
 Edition : 03.02.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 876 404
 Injection pump
 Pump designation : PES6A95D410RS2835
 EP type number : 0 410 896 896
 Governor
 Governor design. : RSV650...1050A8C2263
 L
 Governor no. : 0 420 232 583

Customer-spec. information
 Customer : FNM-GEOTECH

Engine : 7.5 L

1st version kW : 149.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.55...2.65
 : (2.50...2.70)
 Rack travel in mm : 9.00...12.00
 Firing order : 1-5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1050
 Rack travel in mm : 13.00...13.20
 Del.quantity cm³/ : 12.3...12.7
 100 s: (12.0...12.9)
 Spread cm³ : 0.3
 100 s: (0.6)

2nd speed rpm : 650.0
 Rack travel in mm : 5.3...5.5
 Del.quantity cm³/ : 2.1...2.5
 100 s: (1.9...2.8)
 Spread cm³ : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 3.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1050
 Aneroid pressure h: 1200
 Del.quantity : 123.0...127.0
 1000 : (120.5...129.5)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 96...104

Testing:
 1st rack travel in: 12.00

Speed rpm : 1093...1098
2nd rack travel in: 4.00
Speed rpm : 1128...1143
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 73...81
Setting point w/out bumper spring
Speed rpm : 650
Rack travel in mm : 4.9

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 650
Rack travel in mm : 5.30...5.50
Rack travel in mm : 2.00
Speed rpm : 670...730

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 13.00...13.20
2nd speed rpm : 750
Rack travel in m: 14.40...14.60
3rd speed rpm : 975
Rack travel in m: 13.50...13.80
4th speed rpm : 1050
Rack travel in m: 12.50...12.70

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 14.40...14.60

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.80...9.00
2nd pressure hPa : 550
Rack travel in m: 13.50...13.60
3rd pressure hPa : 325
Rack travel in m: 10.50...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 750
Del.quantity cm³/ : 150.5...152.5
1000 s: (148.5...154.5)

Spread cm³ : 3.50
1000 s: (6.00)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 75.0...79.0
1000 s: (72.5...81.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.00
Speed rpm : 1093...1098

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 190.0...210.0
1000 s: (187.0...213.0)

LOW IDLE

Speed rpm : 650
Rack travel in mm : 5.30...5.50
Del.quantity cm³/ : 21.5...25.5
1000 s: (19.0...28.0)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

Hydraulic latching of starting
delivery.

Latching at 0.75 bar...0.85 bar.

Unlatching at 0.40 bar...0.50 bar

APPLICATION

Combine-harvester

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FOR
 Edition : 22.01.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 876 405
 Injection pump
 Pump designation : PES6A95D410RS2835
 EP type number : 0 410 896 896
 Governor
 Governor design. : RSV400...1050A2C2263
 -1L
 Governor no. : 0 420 232 584

Customer-spec. information

Customer : FNM-GEOTECH
 Engine : 7.5 L-8640 Trak
 1st version kW : 131.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 419 992 198
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 101
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,6
 Test lines : 1 680 750 008
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.55...2.65
 : (2.50...2.70)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1050
 Rack travel in mm : 12.10...12.30
 Del.quantity cm³/ : 11.1...11.5
 100 s : (10.8...11.7)
 Spread cm³ : 0,3
 100 s : (0,6)

2nd speed rpm : 400.0
 Rack travel in mm : 5.5...5.7
 Del.quantity cm³/ : 1.3...1.7
 100 s : (1.0...1.9)
 Spread cm³ : 0,3
 100 s : (0,5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 3.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1050
 Aneroid pressure h: 1200
 Del.quantity : 111.0...115.0
 1000 : (108.5...117.5)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 95...103

Testing:
 1st rack travel in: 11.20

Speed rpm : 1093...1098
2nd rack travel in: 4.00
Speed rpm : 1163...1178
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.1

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 400
Rack travel in mm : 5.50...5.70
Rack travel in mm : 2.00
Speed rpm : 570...630

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.10...12.30
2nd speed rpm : 750
Rack travel in m: 14.00...14.20
3rd speed rpm : 925
Rack travel in m: 13.10...13.40
4th speed rpm : 1050
Rack travel in m: 11.60...11.80

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 14.00...14.20

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.10...10.20
2nd pressure hPa : 900
Rack travel in m: 13.50...13.60
3rd pressure hPa : 600
Rack travel in m: 11.60...12.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 750
Del.quantity cm³/ : 140.0...142.0
1000 s: (138.0...144.0)

Spread cm³ : 3.50
1000 s: (6.00)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 89.0...91.0
1000 s: (86.5...93.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.20
Speed rpm : 1093...1098

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 185.0...205.0
1000 s: (182.0...208.0)

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.50...5.70
Del.quantity cm³/ : 13.0...17.0
1000 s: (10.5...19.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

Hydraulic latching of starting
delivery.

Latching at 0.75 bar...0.85 bar.

Unlatching at 0.40 bar...0.50 bar

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FOR
 Edition : 03.02.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 876 406
 Injection pump
 Pump designation : PES6A95D410RS2835
 EP type number : 0 410 896 896
 Governor
 Governor design. : RSV400...1050A2C2263
 -2L
 Governor no. : 0 420 232 585

Customer-spec. information
 Customer : FNM-GEOTECH

Engine : 7.5 L-8740 Trak

1st version kw : 142.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.55...2.65
 : (2.50...2.70)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1050
 Rack travel in mm : 13.40...13.50
 Del. quantity cm³/ : 13.0...13.4
 100 s : (12.7...13.6)
 Spread cm³ : 0.3
 100 s : (0.6)

2nd speed rpm : 400.0
 Rack travel in mm : 5.2...5.5
 Del. quantity cm³/ : 1.3...1.7
 100 s : (1.0...1.9)
 Spread cm³ : 0.3
 100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1050
 Aneroid pressure h: 1200
 Del. quantity : 130.0...134.0
 1000 : (127.5...136.5)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 92...100

Testing:
 1st rack travel in: 12.40

Speed rpm : 1093...1098
2nd rack travel in: 4.00
Speed rpm : 1163...1178
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 66...74
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 4.8

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 400
Rack travel in mm : 5.20...5.50
Rack travel in mm : 2.00
Speed rpm : 540...600

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 13.40...13.50
2nd speed rpm : 650
Rack travel in m: 15.00...15.20
3rd speed rpm : 900
Rack travel in m: 14.10...14.50
4th speed rpm : 1050
Rack travel in m: 12.90...13.00

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 15.00...15.20

Measurement

Speed 1/min : 500
1st pressure hPa : -
Rack travel in m: 10.70...10.80
2nd pressure hPa : 900
Rack travel in m: 14.00...14.10
3rd pressure hPa : 650
Rack travel in m: 12.20...12.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 650
Del.quantity cm³/ : 164.0...166.0
1000 s: (162.0...168.0)

Spread cm³ : 3.50
1000 s: (-)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 99.0...101.0
1000 s: (96.5...103.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.40
Speed rpm : 1093...1098

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 185.0...205.0
1000 s: (182.0...208.0)

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.20...5.50
Del.quantity cm³/ : 13.0...17.0
1000 s: (10.5...19.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

Hydraulic latching of starting
delivery.

Latching at 0.75 bar...0.85 bar.

Unlatching at 0.40 bar...0.50 bar

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FOR
 Edition : 03.02.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 876 407
 Injection pump
 Pump designation : PES6A95D410RS2835
 EP type number : 0 410 896 896
 Governor
 Governor design. : RSV650...1050A8C2263
 -3L
 Governor no. : 0 420 232 586

Customer-spec. information
 Customer : FNH-GEOTECH

Engine : 7.5 L

1st version kW : 138.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.55...2.65
 : (2.50...2.70)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1050
 Rack travel in mm : 12.70...12.90
 Del. quantity cm³/ : 11.8...12.2
 100 s : (11.5...12.4)
 Spread cm³ : 0.3
 100 s : (0.6)

2nd speed rpm : 650.0
 Rack travel in mm : 5.4...5.6
 Del. quantity cm³/ : 2.0...2.4
 100 s : (1.8...2.5)
 Spread cm³ : 0.3
 100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 3.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1050
 Aneroid pressure h: 800
 Del. quantity : 118.0...122.0
 1000 : (115.5...124.5)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 97...105

Testing:
 1st rack travel in: 11.80

Speed rpm : 1093...1098
2nd rack travel in: 4.00
Speed rpm : 1128...1143
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 75...83
Setting point w/out bumper spring
Speed rpm : 650
Rack travel in mm : 5.0

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 650
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 750...810

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.70...12.90
2nd speed rpm : 750
Rack travel in m: 13.90...14.10
3rd speed rpm : 975
Rack travel in m: 13.20...13.50
4th speed rpm : 1050
Rack travel in m: 12.20...12.40

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 800
Rack travel mm : 13.90...14.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.00...9.10
2nd pressure hPa : 550
Rack travel in m: 13.40...13.50
3rd pressure hPa : 325
Rack travel in m: 11.10...11.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800
Speed rpm : 750
Del.quantity cm³/ : 140.0...142.0
1000 s: (138.0...144.0)

Spread cm³ : 3.50
1000 s: (6.00)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 75.0...79.0
1000 s: (72.5...81.5)

BREAKAWAY

1st version:
1mm rack travel less than

full load rack tr: 11.80
Speed rpm : 1093...1098

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 187.0...207.0
1000 s: (187.0...213.0)

LOW IDLE

Speed rpm : 650
Rack travel in mm : 5.40...5.60
Del.quantity cm³/ : 20.0...24.0
1000 s: (18.5...25.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

Hydraulic latching of starting
delivery.

Latching at 0.75 bar...0.85 bar.

Unlatching at 0.40 bar...0.50 bar

APPLICATION

Combine-harvester

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE
 Edition : 11.01.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 876 412
 Injection pump
 Pump designation : PES6A100D410RS2762-1
 EP type number : 0 410 806 008
 Governor
 Governor design. : RSV450...1100A0C2252
 -3L
 Governor no. : 0 420 232 592

Customer-spec. information
 Customer : JOHN DEERE

Engine : 6076TDW 30

1st version kW : 120.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05
 : (2.90...3.10)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.90...11.00

Del. quantity cm³/ : 10.1...10.3

100 s : (9.9...10.5)

Spread cm³ : 0.4

100 s : (0.6)

2nd speed rpm : 450.0

Rack travel in mm : 5.2...5.4

Del. quantity cm³/ : 1.9...2.3

100 s : (1.6...2.5)

Spread cm³ : 0.6

100 s : (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del. quantity : 101.0...103.0

1000 : (99.0...105.0)

Spread cm³ : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 42...50

Testing:

1st rack travel in: 9.90
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1200...1210
3rd rack travel in: 4.00
Speed rpm : 1190...1220
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 20...28
Setting point w/out bumper spring
Speed rpm : 450
Rack travel in mm : 4.8

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 450
Rack travel in mm : 5.20...5.40

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 10.90...11.00
2nd speed rpm : 500
Rack travel in m: 12.30...12.50

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del. quantity cm³/ : 136.5...140.5
1000 s: (134.5...142.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.90
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 100.0...120.0
1000 s: (95.0...125.0)

LOW IDLE

Speed rpm : 450
Rack travel in mm : 5.20...5.40
Del. quantity cm³/ : 19.0...23.0
1000 s: (16.5...25.5)

Spread cm³ : 6.00
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE54248

Start-of-delivery mark = 13,5° after
start of delivery cyl. 1.

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
 Edition : 11.01.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 876 413
 Injection pump
 Pump designation : PES6A85D41ORS2761-1
 EP type number : 0 410 886 894
 Governor
 Governor design. : RSV325...1i50A8C673-
 2L
 Governor no. : 0 420 232 519

Customer-spec. information
 Customer : KHD

Engine : BF6L913

1st version kw : 112.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve
 : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60
 : (2.45...2.65)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150
 Rack travel in mm : 12.10...12.20
 Del.quantity cm³/ : 8.4...8.5
 100 s : (8.2...8.7)
 Spread cm³ : 0.3
 100 s : (0.5)

2nd speed rpm : 325.0
 Rack travel in mm : 7.5...7.7
 Del.quantity cm³/ : 0.9...1.5
 100 s : (0.7...1.7)
 Spread cm³ : 0.2
 100 s : (0.4)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1150
 Del.quantity : 84.5...85.5
 1000 : (82.5...87.5)
 Spread cm³ : 3.00
 1000 : (5.00)

RATED SPEED

1st version
 Control lever
 position degrees: 100...108

Testing:
 1st rack travel in: 11.10
 Speed rpm : 1190...1200
 2nd rack travel in: 4.00
 Speed rpm : 1225...1255
 3rd rack travel in: 4.00

Speed rpm : 1240...1270
4th rack travel in: 1410
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 63...71
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 7.1

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 325
Rack travel in mm : 7.00...7.20
Rack travel in mm : 2.00
Speed rpm : 430...490

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 12.10...12.20
2nd speed rpm : 500
Rack travel in m: 12.70...12.80
3rd speed rpm : 855
Rack travel in m: 12.50...12.70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750
Del.quantity cm³/ : 87.0...89.0
1000 s: (84.5...91.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.10
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 110.0...120.0
1000 s: (107.0...123.0)
Rack travel in mm : 17.00...17.40

Remarks:

: ORENSTEIN + KOPPEL

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
 Edition : 11.01.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 876 414
 Injection pump
 Pump designation : PES6A85D41ORS2761-1
 EP type number : 0 410 886 894
 Governor
 Governor design. : RSV325...1150A8C674-
 1L
 Governor no. : 0 420 232 518

Customer-spec. information
 Customer : KHD

Engine : BF6L913

1st version kw : 112.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve
 : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60
 : (2.45...2.65)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 12.10...12.20

Del.quantity cm³/ : 8.4...8.5

100 s : (8.2...8.7)

Spread cm³ : 0.3

100 s : (0.5)

2nd speed rpm : 325.0

Rack travel in mm : 7.5...7.7

Del.quantity cm³/ : 0.9...1.5

100 s : (0.7...1.7)

Spread cm³ : 0.2

100 s : (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 700

Del.quantity : 84.5...85.5

1000 : (82.5...87.5)

Spread cm³ : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 100...108

Testing:

1st rack travel in: 11.10

Speed rpm : 1190...1200

2nd rack travel in: 4.00

Speed rpm : 1225...1255

3rd rack travel in: 4.00
Speed rpm : 1240...1270
4th rack travel in: 1410
Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever
position degrees: 63...71
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 7.1

Testing:

Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 325
Rack travel in mm : 7.50...7.70
Rack travel in mm : 2.00
Speed rpm : 430...490

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 12.10...12.20
2nd speed rpm : 500
Rack travel in m: 12.70...12.80
3rd speed rpm : 855
Rack travel in m: 12.50...12.70

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 11.50...11.60

Measurement

Speed 1/min : 500
1st pressure hPa : 350
Rack travel in m: 11.90...12.00
3rd pressure hPa : 700
Rack travel in m: 12.60...12.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 750
Del.quantity cm3/ : 87.0...89.0
1000 s: (84.5...91.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 64.5...65.5
1000 s: (62.5...67.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.10
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 110.0...120.0
1000 s: (107.0...123.0)
Rack travel in mm : 17.00...17.40

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

11- 10- 3- 6- 7- 12

Note remarks

Test sheet : KHD 19,2 b2
 Edition : 11.01.93
 Replaces : 09.91
 Test oil : ISO-4113
 Combination no. : 0 401 840 763
 Injection pump
 Pump designation : PE12P110A920LS3173
 EP type number : 0 411 810 708
 Governor
 Governor design. : RQ300/1000PA8G3-1
 Governor no. : 0 421 801 463

Customer-spec. information
 Customer : KHD

Engine : BF12L513/C

1st version kW : 342.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 4- 9- 8- 5- 2-

K05

Phasing : 0-15-60-75-120-135-
 180-195-240-255-300-
 315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000
 Rack travel in mm : 12.90...13.00
 Del. quantity cm³/ : 16.4...16.6
 100 s : (16.1...16.9)
 Spread cm³ : 0.5
 100 s : (0.8)

2nd speed rpm : 300.0
 Rack travel in mm : 6.8...7.0
 Del. quantity cm³/ : 1.5...2.1
 100 s : (1.2...2.3)
 Spread cm³ : 0.7
 100 s : (1.0)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1000
 Del. quantity : 164.0...166.0
 1000 : (161.0...169.0)
 Spread cm³ : 5.00
 1000 : (8.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600
 Rack travel in mm : 20.0

Testing:
 1st rack travel in: 11.90
 Speed rpm : 1035...1050
 2nd rack travel in: 4.00
 Speed rpm : 1105...1135

4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.9

Testing:
Speed rpm : 100
Minimum rack trave: 8.10
Speed rpm : 300
Rack travel in mm : 6.80...7.00
Rack travel in mm : 2.00
Speed rpm : 340...380

TORQUE CONTROL
Dimension a mm : 0.20
Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 12.90...13.00
2nd speed rpm : 650
Rack travel in m: 13.20...13.40

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.90
Speed rpm : 1035...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...165.0
1000 s: (131.0...169.0)

Remarks:
:

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 9,0 j
 Edition : 03.12.92
 Replaces : 02.89
 Test oil : ISO-4113
 Combination no. : 0 401 846 849
 Injection pump
 Pump designation : PE6P120A320RS3196
 EP type number : 0 411 826 763
 Governor
 Governor design. : RQV20J...1100PA729-1
 Governor no. : 0 421 813 470

Customer-spec. information
 Customer : SAAB-SCANIA

Engine : DS9 06

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 019
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 9.00...12.00

K07

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 10 40...10.50

Del.quantity cm³/ : 13.3...13.5

100 s: (13.0...13.8)

Spread cm³ : 0.5

100 s: (0.8)

2nd speed rpm : 225.0

Rack travel in mm : 4.7...5.3

Del.quantity cm³/ : 2.2...2.6

100 s: (-)

Spread cm³ : 0.3

100 s: (0.6)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 225

travel mm : 0.50...0.90

2nd speed rpm : 350

travel mm : 2.00...2.60

3rd speed rpm : 650

travel mm : 4.90...5.50

4th speed rpm : 1145

travel mm : 8.30...8.50

5th speed rpm : 1250

travel mm : 9.20...9.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1120

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 133.0...135.0

1000 : (130.0...138.0)

Spread cm³ : 5.00

1000 : (8.00)

RATED SPEED

1st version
Control lever
position degrees: 111...119

Testing:
1st rack travel in: 9.40
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1250...1280
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 59...67

Testing:
Speed rpm : 100
Minimum rack travel: 6.20
Speed rpm : 225
Rack travel in mm : 4.60...4.80
Rack travel in mm : 2.00
Speed rpm : 300...360

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 1100
Del. quantity cm³/ : 145.0...153.0
1000 s: (143.0...155.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.40
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 330.0...380.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 225
Rack travel in mm : 4.60...4.80

Remarks:

:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Start-of-delivery setting with RCBC
diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 12,2 i1
 Edition : 18.12.92
 Replaces : 07.92
 Test oil : ISO-4113
 Combination no. : 0 401 846 869
 Injection pump
 Pump designation : PE6P12GA32ORS3118
 EP type number : 0 411 826 726
 Governor
 Governor design. : RQV250...1100PA920-5
 Governor no. : 0 421 813 782

Customer-spec. information

Customer : VOLVO
 Engine : THD 102 KD
 1st version kW : 250.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder assembly : 1 688 901 019
 Opening pressure, bar : 207...210
 Orifice plate diameter mm : 0,8
 Test lines : 1 680 750 067
 Outside diameter x Wall thickness x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.60...2.70
 : (2.55...2.75)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 12.70...12.80
 Del. quantity cm³/ : 22.2...22.4
 100 s: (21.9...22.7)
 Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 250.0
 Rack travel in mm : 4.4...4.6
 Del. quantity cm³/ : 2.9...3.4
 100 s: (2.7...3.7)
 Spread cm³ : 0.5
 100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 1.10...1.30
 2nd speed rpm : 500
 travel mm : 4.10...4.90
 3rd speed rpm : 700
 travel mm : 6.30...6.70
 4th speed rpm : 950
 travel mm : 6.30...6.70
 5th speed rpm : 1100
 travel mm : 7.00...7.50

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1175
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 1200

Del.quantity : 222.0...224.0
1000 : (219.0...227.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 112...120

Testing:

1st rack travel in: 11.70
Speed rpm : 1130...1140
2nd rack travel in: 4.00
Speed rpm : 1210...1240
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 63...71

Testing:

Speed rpm : 100
Minimum rack travel: 6.00
Speed rpm : 250
Rack travel in mm : 4.40...4.60

CONSTANT REGULATION

Speed rpm : 250...420

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 12.70...12.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.40...8.60
2nd pressure hPa : 160
Rack travel in m: 8.60...8.70
3rd pressure hPa : 850
Rack travel in m: 11.70...11.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm³/ : 133.0...135.0
1000 s: (130.0...138.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 1130...1140

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 230.0...270.0
1000 s: (226.0...274.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.40...4.60
Del.quantity cm³/ : 29.5...34.5
1000 s: (27.0...37.0)
Spread cm³ : 5.00
1000 s: (7.00)

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 8,3 p 4
 Edition : 27.11.92
 Replaces : 07.91
 Test oil : ISO-4113

Combination no. : 0 401 846 898

Injection pump
 Pump designation : PE6P110A72ORS3225
 EP type number : 0 411 816 763
 Governor
 Governor design. : RQV275...1200PA910
 Governor no. : 0 421 813 746

Customer-spec. information
 Customer : DAF

Engine : HS 200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.50...12.60

Del. quantity cm³/ : 12.4...12.6
 100 s : (12.2...12.8)

Spread cm³ : 0.4
 100 s : (0.7)

2nd speed rpm : 275.0
 Rack travel in mm : 7.2...7.4
 Del. quantity cm³/ : 1.4...1.9
 100 s : (1.1...2.1)

Spread cm³ : 0.4
 100 s : (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 1.00...1.40

2nd speed rpm : 450
 travel mm : 2.90...3.30

3rd speed rpm : 800
 travel mm : 4.70...5.10

4th speed rpm : 1200
 travel mm : 7.80...8.00

5th speed rpm : 1500
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1235
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1000
 Aneroid pressure h: 1000
 Del. quantity : 124.0...126.0
 1000 : (122.0...128.0)

Spread cm³ : 4.00
 1000 : (7.50)

RATED SPEED

1st version

Control lever
position degrees: 116...124

Testing:
1st rack travel in: 11.50
Speed rpm : 1240...1250
2nd rack travel in: 4.00
Speed rpm : 1345...1375
4th rack travel in: 1450
Speed rpm : 0.00...1.40

LOW IDLE 1
Control lever
position degrees: 78...86

Testing:
Speed rpm : 100
Minimum rack travel: 6.70
Speed rpm : 275
Rack travel in mm : 4.70...4.90

CONSTANT REGULATION
Speed rpm : 280...400

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 12.50...12.60

Measurement
Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 10.90...11.00
2nd pressure hPa : 360
Rack travel in m: 12.10...12.20
3rd pressure hPa : 270
Rack travel in m: 11.40...11.60

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 600
Del. quantity cm³/ : 87.0...89.0
1000 s: (85.0...91.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.50

Speed rpm : 1240...1250

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.70...4.90

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA
 Edition : 23.10.91
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 846 926
 Injection pump
 Pump designation : PE6P110A72DRS3040-2
 EP type number : 0 411 816 774
 Governor
 Governor design. : RQV200...1000PA555-4
 Governor no. : 0 421 813 878

Customer-spec. information
 Customer : SCANIA

Engine : DS11

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 104
 Opening
 pressure, bar : 250...253
 Orifice plate
 diameter mm : 0,7
 Test lines : 1 680 750 008
 Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 3.30...3.40
 : (3.25...3.45)
 Rack travel in mm : 9.00...12.00

K13

Firing order : 1- 5- 3- 6- 2- 4
 Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (G.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 13.30...13.40
 Del.quantity cm³/ : 17.2...17.4
 100 s: (17.0...17.6)
 Spread cm³ : 0.6
 100 s: (0.9)
 2nd speed rpm : 250.0
 Rack travel in mm : 4.4...4.8
 Del.quantity cm³/ : 1.7...2.1
 100 s: (-)
 Spread cm³ : 0.3
 100 s: (0.6)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 225
 travel mm : 1.10...1.50
 2nd speed rpm : 350
 travel mm : 2.30...2.90
 3rd speed rpm : 700
 travel mm : 4.70...5.30
 4th speed rpm : 1050
 travel mm : 8.40...8.60
 5th speed rpm : 1165
 travel mm : 9.90...10.30

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1070
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 900
 Del.quantity : 172.0...174.0
 1000 : (170.0...176.0)

Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 112...120

Testing:
1st rack travel in: 12.30
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1140...1170
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LCW IDLE 1
Control lever
position degrees: 61...69

Testing:
Speed rpm : 100
Minimum rack travel: 6.00
Speed rpm : 250
Rack travel in mm : 4.40...4.60
Rack travel in mm : 2.00
Speed rpm : 360...420

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.30...13.40

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.80...12.20
2nd pressure hPa : 405
Rack travel in m: 13.10...13.20
3rd pressure hPa : 290
Rack travel in m: 12.30...12.50

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 1000
Del.quantity cm³/ : 165.0...173.0
1000 s: (163.0...175.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 138.0...140.0
1000 s: (135.0...143.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.30
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 240.0...290.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.40...4.60

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Start-of-delivery setting with ROBO
diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 5,9 b
 Edition : 18.12.92
 Replaces : 07.92
 Test oil : ISO-4113
 Combination no. : 0 401 846 937
 Injection pump
 Pump designation : PE6P110A320RS3266
 EP type number : 0 411 816 777
 Governor
 Governor design. : RQV300...1300PA996K
 Governor no. : 0 421 815 277

Customer-spec. information
 Customer : VOLVO-TRUCK

Engine : TD63ES

1st version kW : 155.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.40...2.50
 : (2.30...2.50)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 780

 Rack travel in mm : 11.90...12.00

 Del. quantity cm³/ : 13.9...14.1

 100 s : (13.7...14.3)

 Spread cm³ : 0.5

 100 s : (0.9)

2nd speed rpm : 330.0
 Rack travel in mm : 5.4...5.6
 Del. quantity cm³/ : 1.7...2.1
 100 s : (1.4...2.4)
 Spread cm³ : 0.7
 100 s : (1.1)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 330
 travel mm : 1.20...1.60
 2nd speed rpm : 500
 travel mm : 2.90...3.50
 3rd speed rpm : 900
 travel mm : 4.70...5.30
 4th speed rpm : 1370
 travel mm : 9.80...10.00
 5th speed rpm : 1450
 travel mm : 11.00...11.40

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1470
 Rack travel in mm : 6.00...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 780
 Aneroid pressure h: 1200

Del. quantity : 139.0...141.0
1000 : (137.0...145.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 114...122

Testing:

1st rack travel in: 11.20
Speed rpm : 1360...1370
2nd rack travel in: 4.00
Speed rpm : 1430...1460
4th rack travel in: 1520
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 70...78

Testing:

Speed rpm : 100
Minimum rack travel: 7.00
Speed rpm : 330
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION

Speed rpm : 330...600

TORQUE CONTROL

Dimension a mm : 0.30
Torque control curve - 1st version
1st speed rpm : 780
Rack travel in m: 11.90...12.00
2nd speed rpm : 1300
Rack travel in m: 12.20...12.40

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 1300
Pressure hPa : 1200
Rack travel mm : 12.20...12.40

Measurement

Speed 1/min : 1300

1st pressure hPa : -
Rack travel in m: 8.50...8.70
2nd pressure hPa : 95
Rack travel in m: 8.70...8.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1300
Del. quantity cm3/ : 130.0...134.0
1000 s: (127.0...137.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 780
Del. quantity cm3/ : 73.0...75.0
1000 s: (70.0...78.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 11.20
Speed rpm : 1360...1370

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm3/ : 65.0...85.0
1000 s: (61.0...89.0)
Rack travel in mm : 8.50...8.70

LOW IDLE

Speed rpm : 330
Rack travel in mm : 5.40...5.60
Del. quantity cm3/ : 17.0...21.0
1000 s: (14.0...24.0)
Spread cm3 : 7.00
1000 s: (11.00)

Remarks:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PEG 10,5 a
 Edition : 27.11.92
 Replaces : 10.91
 Test oil : ISO-4113
 Combination no. : 0 401 846 947
 Injection pump
 Pump designation : PE6P110A720LS3283
 EP type number : 0 411 816 786
 Governor
 Governor design. : RQV250...1000PA1011
 Governor no. : 0 421 813 937

Customer-spec. information
 Customer : IVECO-PEGASO

Engine : 95 T1 GX

1st version kW : 165.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90
 : (3.75...3.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 10.80...10.90

Del. quantity cm³/ : 17.2...17.4

100 s: (16.9...17.7)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 6.6...6.8

Del. quantity cm³/ : 1.8...2.2

100 s: (1.6...2.4)

Spread cm³ : 0.4

100 s: (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.00...1.40

2nd speed rpm : 400

travel mm : 2.20...2.80

3rd speed rpm : 650

travel mm : 4.50...5.10

4th speed rpm : 1050

travel mm : 8.50...8.70

5th speed rpm : 1140

travel mm : 9.70...10.10

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1040

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 900

Del. quantity : 172.0...174.0

1000 : (169.0...177.0)

Spread cm³ : 4.00
1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:
1st rack travel in: 9.80
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1130...1160
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 81...89

Testing:
Speed rpm : 100
Minimum rack travel: 8.20
Speed rpm : 250
Rack travel in mm : 6.60...6.80

CONSTANT REGULATION
Speed rpm : 250...480

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 10.80...10.90

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.00...8.30
2nd pressure hPa : 520
Rack travel in m: 10.10...10.20
3rd pressure hPa : 310
Rack travel in m: 8.80...9.00

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 980
Del.quantity cm³/ : 174.0...178.0
1000 s: (171.0...181.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 117.0...119.0
1000 s: (114.0...122.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.80
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 140.0...160.0
1000 s: (136.0...164.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 6.60...6.80

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA
 Edition : 27.11.92
 Replaces : 10.92
 Test oil : ISO-4113
 Combination no. : 0 401 846 956
 Injection pump
 Pump designation : PE6P120A32ORS3196
 EP type number : 0 411 826 763
 Governor
 Governor design. : RGV200...1100PA729-4
 Governor no. : 0 421 813 950

Customer-spec. information
 Customer : SCANIA

Engine : DSC9 10

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder assembly : 1 688 901 104
 Opening pressure, bar : 250...253
 Orifice plate diameter mm : 0,7
 Test lines : 1 680 750 008
 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 10.50...10.60
 Del. quantity cm³/ : 13.2...13.4
 100 s: (12.9...13.7)
 Spread cm³ : 0.8
 100 s: (1.2)

2nd speed rpm : 250.0
 Rack travel in mm : 4.6...5.0
 Del. quantity cm³/ : 1.2...1.6
 100 s: (-)
 Spread cm³ : 0.4
 100 s: (0.8)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 0.70...1.10
 2nd speed rpm : 350
 travel mm : 2.00...2.60
 3rd speed rpm : 650
 travel mm : 4.90...5.50
 4th speed rpm : 1145
 travel mm : 8.30...8.50
 5th speed rpm : 1250
 travel mm : 9.20...9.60

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1120
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 900
 Del. quantity : 132.0...134.0
 1000 : (129.0...137.0)

Spread cm³ : 8.00
1000 : (12.00)

RATED SPEED

1st version
Control lever
position degrees: 111...119

Testing:
1st rack travel in: 9.50
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1235...1265
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 56...66

Testing:
Speed rpm : 100
Minimum rack travel: 6.20
Speed rpm : 250
Rack travel in mm : 4.60...4.80
Rack travel in mm : 2.00
Speed rpm : 320...380

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 10.50...10.60

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.80...10.20
2nd pressure hPa : 350
Rack travel in m: 10.20...10.30
3rd pressure hPa : 320
Rack travel in m: 10.00...10.20

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 1100
Del.quantity cm³/ : 128.0...136.0
1000 s: (126.0...138.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 114.0...118.0
1000 s: (112.0...120.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.50
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 110.0...130.0
1000 s: (-)
Rack travel in mm : 9.80...10.20

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.60...4.80

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Start-of-delivery setting with ROBO
diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : UNI 13,8 i
 Edition : 11.06.92
 Replaces : 18.09.91
 Test oil : ISO-4113
 Combination no. : 0 401 846 958
 Injection pump
 Pump designation : PE6P120A720RS3291
 EP type number : 0 411 826 800
 Governor
 Governor design. : RQV300...1000PA1016
 Governor no. : G 421 813 964

Customer-spec. information
 Customer : IVECO-UNIC

Engine : 8210.22.521

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 019
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 075
 Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000
 Rack travel in mm : 11.00...11.10
 Del.quantity cm³/ : 22.5...22.7
 100 s : (22.2...23.0)
 Spread cm³ : 0.5
 100 s : (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 3.8...4.2
 Del.quantity cm³/ : 1.9...2.5
 100 s : (1.6...2.8)
 Spread cm³ : 0.8
 100 s : (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1045
 travel mm : 7.70...7.90
 2nd speed rpm : 300
 travel mm : 1.10...1.50
 3rd speed rpm : 450
 travel mm : 2.40...3.00
 4th speed rpm : 700
 travel mm : 4.30...4.70

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1145
 Rack travel in mm : 9.70...12.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1000
 Aneroid pressure h: 700
 Del.quantity : 225.0...227.0
 1000 : (222.0...230.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 108...116

Testing:
1st rack travel in: 10.00
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1125...1155
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 57...65

Testing:
Speed rpm : 100
Minimum rack travel: 6.00
Speed rpm : 300
Rack travel in mm : 3.90...4.10

CONSTANT REGULATION
Speed rpm : 300...420

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 11.00...11.10

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.70...8.90
2nd pressure hPa : 220
Rack travel in m: 10.30...10.40
3rd pressure hPa : 180
Rack travel in m: 9.20...9.50

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 500
Del.quantity cm3/ : 224.0...228.0
1000 s: (221.0...231.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 155.0...157.0
1000 s: (152.0...160.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.00
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 240.0...260.0
1000 s: (236.0...264.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 3.80...4.20
Del.quantity cm3/ : 19.0...25.0
1000 s: (16.0...28.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

:
Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 10,2 c
 Edition : 18.12.92
 Replaces : 11.91
 Test oil : ISO-4113

Combination no. : 0 401 846 960

Injection pump
 Pump designation : PE6P110A320RS3265
 EP type number : 0 411 816 778
 Governor
 Governor design. : RQV300...1100PA1019K
 Governor no. : 0 421 815 290

Customer-spec. information
 Customer : VME

Engine : TD102KTE

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder assembly : 0 681 343 009

Opening pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10
 : (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.40...13.50

Del.quantity cm³/ : 16.8...17.0
 100 s : (16.6...17.2)

Spread cm³ : 0.4
 100 s : (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 5.2...5.4

Del.quantity cm³/ : 2.5...2.9
 100 s : (2.3...3.1)

Spread cm³ : 0.3
 100 s : (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 0.90...1.30

2nd speed rpm : 500
 travel mm : 3.00...3.60

3rd speed rpm : 900
 travel mm : 7.30...7.70

4th speed rpm : 1150
 travel mm : 8.90...9.10

5th speed rpm : 1260
 travel mm : 10.80...11.20

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1230

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1500

Del.quantity : 168.0...170.0
 1000 : (166.0...172.0)

Spread cm³ : 4.00
 1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 113...121

Testing:
1st rack travel in: 12.40
Speed rpm : 1160...1170
2nd rack travel in: 4.00
Speed rpm : 1240...1270
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 67...75

Testing:
Speed rpm : 100
Minimum rack travel: 6.80
Speed rpm : 300
Rack travel in mm : 5.20...5.40

CONSTANT REGULATION
Speed rpm : 300...460

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 13.40...13.50
2nd speed rpm : 600
Rack travel in m: 13.10...13.30

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1100
Pressure hPa : 1500
Rack travel mm : 13.40...13.50

Measurement
Speed 1/min : 1100

1st pressure hPa : -
Rack travel in m: 10.00...10.20
2nd pressure hPa : 90
Rack travel in m: 10.20...10.30
3rd pressure hPa : 170
Rack travel in m: 12.60...12.80

START CUT-OUT

Speed 1/min : 250 (270)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1500
Speed rpm : 600
Del.quantity cm³/ : 174.0...178.0
1000 s: (172.0...180.0)
Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm³/ : 116.0...118.0
1000 s: (113.0...121.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.40
Speed rpm : 1160...1170

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 140.0...170.0
1000 s: (136.0...174.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.20...5.40
Del.quantity cm³/ : 25.0...29.0
1000 s: (23.0...31.0)
Spread cm³ : 3.00
1000 s: (6.00)

Remarks:

:
Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF
Edition : 27.11.92
Replaces : 10.92
Test oil : ISO-4113

Combination no. : D 401 846 964

Injection pump
Pump designation : PE6P110A32ORS3302
EP type number : D 411 816 787
Governor
Governor design. : RQ300/1000PA1012-1
Governor no. : D 421 801 648

Customer-spec. information
Customer : DAF

Engine : LT 195 L

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00x2.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80
 : (3.65...3.85)
Rack travel in mm : 14.00...15.00

K25

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 3.90...4.10
& maximum rack tra: 13.9...14.9
Difference ° CS : 3.00...5.00

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 14.40...14.50

Del. quantity cm³/ : 17.3...17.5

100 s: (17.0...17.7)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 300.0
Rack travel in mm : 5.5...5.7
Del. quantity cm³/ : 1.6...2.1
100 s: (1.4...2.4)
Spread cm³ : 0.4
100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -2
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 850
Aneroid pressure h: 1000
Del. quantity : 173.0...175.0
1000 : (170.5...177.5)
Spread cm³ : 4.00
1000 : (7.50)

RATED SPEED

1st version
Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.40
Speed rpm : 1025...1040
2nd rack travel in: 4.00
Speed rpm : 1105...1135
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.6

Testing:

Speed rpm : 100
Minimum rack travel: 10.00
Speed rpm : 300
Rack travel in mm : 5.50...5.70
Rack travel in mm : 2.00
Speed rpm : 330...370

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 15.10...15.20
2nd speed rpm : 1000
Rack travel in m: 15.00...15.20

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 14.40...14.50

Measurement

Speed 1/min : 600
1st pressure hPa : -
Rack travel in m: 12.30...12.50
2nd pressure hPa : 530
Rack travel in m: 14.00...14.10
3rd pressure hPa : 380
Rack travel in m: 13.00...13.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 600
Del. quantity cm³/ : 131.0...133.0
1000 s: (128.5...135.5)

BREAKAWAY

1st version

K26

1mm rack travel less than
full load rack tr: 13.40
Speed rpm : 1025...1040

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 330.0...370.0
1000 s: (327.0...373.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.50...5.70
Del. quantity cm³/ : 16.5...21.5
1000 s: (14.0...24.0)
Spread cm³ : 4.50
1000 s: (7.50)

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL
 Edition : 18.12.92
 Replaces : 10.92
 Test oil : ISO-4113
 Combination no. : 0 401 846 968
 Injection pump
 Pump designation : PE6P110A32ORS3197
 EP type number : 0 411 816 752
 Governor
 Governor design. : RQV300...1100PA589-4
 Governor no. : 0 421 814 022

Customer-spec. information
 Customer : VME

Engine : 1D102 KF

1st version kW : 200.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 9.00...12.00

K27

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.90...12.00

Del.quantity cm³/ : 16.7...16.9

100 s: (16.4...17.2)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 4.4...4.8

Del.quantity cm³/ : 2.5...2.9

100 s: (2.2...3.2)

Spread cm³ : 0.4

100 s: (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.00...1.40

2nd speed rpm : 350

travel mm : 2.20...2.70

3rd speed rpm : 450

travel mm : 3.70...4.10

4th speed rpm : 750

travel mm : 6.30...6.70

5th speed rpm : 1160

travel mm : 7.90...8.10

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1180

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del.quantity : 167.0...169.0

1000 : (164.0...172.0)

Spread cm³ : 4.00
1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:

1st rack travel in: 10.90
Speed rpm : 1160...1170
2nd rack travel in: 4.00
Speed rpm : 1225...1255
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 60...68

Testing:

Speed rpm : 100
Minimum rack travel: 5.90
Speed rpm : 300
Rack travel in mm : 4.30...4.50

CONSTANT REGULATION

Speed rpm : 250...380

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 11.90...12.00

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.90...10.10
2nd pressure hPa : 200
Rack travel in m: 10.10...10.20
3rd pressure hPa : 440
Rack travel in m: 11.40...11.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 700
Del. quantity cm³/ : 127.0...129.0
1000 s: (124.0...132.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.90
Speed rpm : 1160...1170

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 160.0...190.0
1000 s: (156.0...194.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.30...4.50

Remarks:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF
 Edition : 21.01.93
 Replaces : 10.92
 Test oil : ISO-4113
 Combination no. : 0 401 846 969
 Injection pump
 Pump designation : PE6P110A320RS3312
 EP type number : 0 411 816 788
 Governor
 Governor design. : RQ300/1000FA1012-1
 Governor no. : 0 421 801 648

Customer-spec. information
 Customer : DAF

Engine : LT 160 L

1st version kW : 160.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80
 : (3.65...3.85)
 Rack travel in mm : 13.00...14.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.50...5.70
 & maximum rack tra: 12.5...13.5
 Difference ° CS : 4.00...6.00

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 13.00...13.10

Del. quantity cm³/ : 14.1...14.3

100 s: (13.8...14.5)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del. quantity cm³/ : 2.7...3.2

100 s: (2.5...3.5)

Spread cm³ : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-Lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del. quantity : 141.0...143.0

1000 : (138.5...145.5)

Spread cm³ : 4.00

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.00
Speed rpm : 1042...1052
2nd rack travel in: 4.00
Speed rpm : 1110...1140
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:

Speed rpm : 200
Minimum rack travel: 9.90
Speed rpm : 300
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.00
Speed rpm : 330...370

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 14.10...14.20
2nd speed rpm : 1000
Rack travel in m: 14.00...14.20

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 13.00...13.10

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 11.60...11.80
2nd pressure hPa : 360
Rack travel in m: 12.70...12.80
3rd pressure hPa : 270
Rack travel in m: 12.00...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm³/ : 108.5...110.5
1000 s: (106.0...113.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.00
Speed rpm : 1042...1052

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 330.0...370.0
1000 s: (327.0...373.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.40...6.60
Del.quantity cm³/ : 27.5...32.5
1000 s: (25.0...35.0)
Spread cm³ : 4.50
1000 s: (7.50)

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 9,6 x
 Edition : 05.10.92
 Replaces : 04.91
 Test oil : ISO-4113
 Combination no. : 0 401 848 792
 Injection pump
 Pump designation : PE8P120A920/5LS3208
 EP type number : 0 411 828 721
 Governor
 Governor design. : RQ325/1150PA879
 Governor no. : 0 421 801 417

Customer-spec. information
 Customer : KHD

Engine : BF8L513CP

1st version kw : 294.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 3.40...3.50
 : (3.35...3.55)
 Rack travel in mm : 15.00...19.00
 Firing order : 1- 8- 7- 2- 6- 5-
 4- 3

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1150
 Rack travel in mm : 12.30...12.40
 Del. quantity cm³/ : 18.9...19.1
 100 s : (18.6...19.4)
 Spread cm³ : 0.6
 100 s : (1.0)

2nd speed rpm : 325.0
 Rack travel in mm : 6.5...6.7
 Del. quantity cm³/ : 1.6...2.2
 100 s : (1.3...2.5)
 Spread cm³ : 0.9
 100 s : (1.3)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -7
 Speed rpm : 700
 Rack travel in mm : 14.70...16.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1150
 Aneroid pressure h: 900
 Del. quantity : 189.0...191.0
 1000 : (186.0...194.0)
 Spread cm³ : 6.00
 1000 : (10.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 700
 Rack travel in mm : 15.5

Testing:

1st rack travel in: 11.30
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1260...1290
4th rack travel in: 14.00
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 6.6

Testing:

Speed rpm : 100
Minimum rack travel: 8.10
Speed rpm : 325
Rack travel in mm : 6.50...6.70
Rack travel in mm : 2.00
Speed rpm : 400...440

CONSTANT REGULATION

Speed rpm : 300...510

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 12.30...12.40
2nd speed rpm : 600
Rack travel in m: 12.30...12.50

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 400
Pressure hPa : 900
Rack travel mm : 12.80...12.90

Measurement

Speed 1/min : 400

1st pressure hPa : -
Rack travel in m: 10.20...10.40
2nd pressure hPa : 450
Rack travel in m: 11.00...11.10
3rd pressure hPa : 590
Rack travel in m: 12.00...12.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm³/ : 104.0...106.0
1000 s: (101.0...109.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.30
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 165.0...195.0
1000 s: (160.0...200.0)

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

APPLICATION

Rail car

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
 Edition : 28.06.91
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 849 752
 Injection pump
 Pump designation : PE10P110A920/5LS3276
 EP type number : 0 411 819 712
 Governor
 Governor design. : RQV350...1150PA997
 Governor no. : 0 421 813 927

Customer-spec. information
 Customer : KHD

Engine : F 10L513

1st version kW : 223.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.10...3.20
 : (3.05...3.25)

Rack travel in mm : 9.00...12.00

Firing order : 1- 10- 9- 4- 3- 6-
 5- 8- 7- 2

Phasing : 0-27-72-99-144-171-
 216-243-288-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 9.90...10.00

Del. quantity cm³/ : 10.8...11.0

100 s: (10.5...11.3)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 350.0

Rack travel in mm : 5.4...5.6

Del. quantity cm³/ : 1.2...1.7

100 s: (1.0...2.0)

Spread cm³ : 0.4

100 s: (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 375
 travel mm : 2.30...2.70

2nd speed rpm : 510
 travel mm : 3.60...4.10

3rd speed rpm : 870
 travel mm : 7.40...7.90

4th speed rpm : 1200
 travel mm : 9.90...10.40

5th speed rpm : 1300
 travel mm : 10.90...11.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1250

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del. quantity : 108.0...110.0

1000 : (105.0...113.0)

Spread cm³ : 4.00
1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 98...106

Testing:

1st rack travel in: 8.90
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1270...1300
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 69...75

Testing:

Speed rpm : 100
Minimum rack travel: 7.10
Speed rpm : 350
Rack travel in mm : 4.40...4.60

CONSTANT REGULATION

Speed rpm : 300...420

START CUT-OUT

Speed 1/min : 220 (0)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700
Del.quantity cm³/ : 100.0...134.0
1000 s: (97.0...107.0)
Spread cm³ : 6.00
1000 s: (9.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.90
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...165.0
1000 s: (131.0...169.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 4.40...4.60

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM 21,6 A1
 Edition : 26.04.91
 Replaces : 11.86
 Test oil : ISO-4113
 Combination no. : 0 401 870 089
 Injection pump
 Pump designation : PE12P120A520/SRS428-1
 EP type number : 0 411 820 034
 Governor
 Governor design. : RSUV300...750P10A356
 Governor no. : 0 421 829 103

Customer-spec. information
 Customer : MWM

Engine : D234V12

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 019
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 067
 Outside diameter
 x wall thickness
 x Length mm : 6.00x1.50x1000
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 2.80...2.90
 : (2.75...2.95)

L07

Rack travel in mm : 9.00...12.00
 Firing order : 1- 2- 9- 10- 5- 6-
 11- 12- 3- 4- 7- 8

Phasing : 0-30-60-90-120-150-
 180-210-240-270-300-
 330
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 750
 Rack travel in mm : 9.70...9.80
 Del. quantity cm³/ : 17.1...17.5
 100 s: (16.8...17.8)
 Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.9...6.1
 Del. quantity cm³/ : 2.8...3.6
 100 s: (2.5...3.9)
 Spread cm³ : 0.8
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...1.00

Governor spring pre-tension
 Click setting x : 2.00

RATED SPEED

1st version
 Control lever
 position degrees: 89...97

Testing:
 1st rack travel in: 8.70
 Speed rpm : 790...800
 2nd rack travel in: 4.00
 Speed rpm : 800...830
 4th rack travel in: 950
 Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
 position degrees: 62...70
 Setting point w/out bumper spring
 Speed rpm : 300

Rack travel in mm : 5.5
Speed rpm : 300
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 310...370

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 750
Rack travel in m: 9.70...9.80
2nd speed rpm : 450
Rack travel in m: 9.70...9.80
3rd speed rpm : 310
Rack travel in m: 11.00...11.60

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 8.70
Speed rpm : 790...800

Remarks:

:

Full-load delivery is set on engine
according to engine test report.

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,6o12
 Edition : 27.11.92
 Replaces : 07.91
 Test oil : ISO-4113

Combination no. : 0 401 876 296

Injection pump
 Pump designation : PE6M120A32ORS415-1
 EP type number : 0 411 826 123
 Governor
 Governor design. : RSV250...1100P5A508
 -2
 Governor no. : 0 421 833 195

Customer-spec. information
 Customer : DAF

Engine : DKX 1160

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)

L09

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.30 (0.75)

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 11.60...11.70

Del.quantity cm3/ : 18.7...18.9
 100 s: (18.4...19.1)

Spread cm3 : 0.5
 100 s: (0.9)

2nd speed rpm : 250.0
 Rack travel in mm : 6.7...6.9
 Del.quantity cm3/ : 1.4...2.0
 100 s: (1.1...2.3)

Spread cm3 : 0.8
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 850
 Aneroid pressure h: 700
 Del.quantity : 187.0...189.0
 1000 : (184.5...191.5)

Spread cm3 : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Control lever
 position degrees: 106...114

Testing:
 1st rack travel in: 10.60
 Speed rpm : 1135...1145
 2nd rack travel in: 4.00
 Speed rpm : 1200...1230

3rd rack travel in: 4.00
Speed rpm : 1270...1300
4th rack travel in: 1430
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 72...80
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 6.0

Testing:

Speed rpm : 100
Speed rpm : 250
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.00
Speed rpm : 600...700

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 12.60...12.80
2nd speed rpm : 400
Rack travel in m: 12.60...12.80
3rd speed rpm : 300
Rack travel in m: 12.90...13.40

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 700
Rack travel mm : 11.60...11.70

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 10.30...10.50
2nd pressure hPa : 300
Rack travel in m: 11.30...11.40
3rd pressure hPa : 255
Rack travel in m: 10.80...11.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 600
Del. quantity cm³/ : 140.0...142.0
1000 s: (137.5...144.5)

BREAKAWAY

L10

1st version
1mm rack travel less than

full load rack tr: 10.60
Speed rpm : 1135...1145

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 310.0...350.0
1000 s: (306.0...354.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 6.40...6.60

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 7,1 c 1
 Edition : 18.12.92
 Replaces : 10.89
 Test oil : ISO-4113

Combination no. : 0 401 876 322

Injection pump
 Pump designation : PE6P110A320RS497
 EP type number : 0 411 816 165
 Governor
 Governor design. : RSV200...1200P1A374
 -2
 Governor no. : 0 421 833 205

Customer-spec. information
 Customer : VOLVO

Engine : T1D 71A

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10
 : (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.70...12.80

Del.quantity cm³/ : 13.8...14.0
 100 s : (13.5...14.3)

Spread cm³ : 0.4
 100 s : (0.7)

2nd speed rpm : 200.0

Rack travel in mm : 5.2...5.4

Del.quantity cm³/ : 1.7...2.1
 100 s : (1.4...2.3)

Spread cm³ : 0.3
 100 s : (0.6)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 138.0...140.0
 1000 : (135.0...143.0)

Spread cm³ : 4.00
 1000 : (7.50)

RATED SPEED

1st version
 Control lever
 position degrees: 53...61

Testing:

1st rack travel in: 11.70
 Speed rpm : 1210...1220

2nd rack travel in: 4.00
 Speed rpm : 1260...1290

4th rack travel in: 1400

Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 13...21

Setting point w/out bumper spring

Speed rpm : 200

Rack travel in mm : 4.8

Speed rpm : 200

Rack travel in mm : 5.20...5.40

Rack travel in mm : 2.00

Speed rpm : 280...340

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : 1200

Rack travel mm : 12.70...12.80

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 9.60...9.80

2nd pressure hPa : 900

Rack travel in m: 12.40...12.50

3rd pressure hPa : 380

Rack travel in m: 10.00...10.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 700

Del.quantity cm³/ : 82.0...84.0

1000 s: (79.0...87.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.70

Speed rpm : 1210...1220

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 185.0...215.0

1000 s: (181.0...219.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

L12

Speed rpm : 200

Rack travel in mm : 5.20...5.40

Del.quantity cm³/ : 17.0...21.0

1000 s: (14.5...23.5)

Spread cm³ : 3.00

1000 s: (6.00)

Remarks:

:

Delivery-valve spring pre-tension =

2.40...2.60 mm.

Permissible alteration from 2.20...2.90

mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PEN 6,1 q 1
 Edition : 18.12.92
 Replaces : 10.92
 Test oil : ISO-4113

Combination no. : 0 401 876 340

Injection pump
 Pump designation : PE6P11DA32ORS499
 EP type number : 0 411 816 169
 Governor
 Governor design. : RSV325...1400POA374
 -9
 Governor no. : 0 421 833 335

Customer-spec. information
 Customer : PENTA

Engine : TAMD61

1st version kW : 221.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.40...2.50
 : (2.35...2.55)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.10...11.20

Del. quantity cm³/ : 11.9...12.1
 100 s: (11.7...12.3)

Spread cm³ : 0.4
 100 s: (0.7)

2nd speed rpm : 325.0
 Rack travel in mm : 4.1...4.3
 Del. quantity cm³/ : 1.1...1.5
 100 s: (0.9...1.7)

Spread cm³ : 0.3
 100 s: (0.6)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 6.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1000
 Aneroid pressure h: 900
 Del. quantity : 119.0...121.0
 1000 : (117.0...123.0)

Spread cm³ : 4.00
 1000 : (7.50)

RATED SPEED

1st version
 Control lever
 position degrees: 114...122

Testing:
 1st rack travel in: 10.10
 Speed rpm : 1450...1460

2nd rack travel in: 4.00
Speed rpm : 1525...1555
4th rack travel in: 1630
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 79...87
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 3.7
Speed rpm : 325
Rack travel in mm : 3.60...3.80
Rack travel in mm : 2.00
Speed rpm : 450...510

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 11.00...11.20

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.90...9.10
2nd pressure hPa : 370
Rack travel in m: 9.10...9.20
3rd pressure hPa : 720
Rack travel in m: 10.60...10.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 1400
Del.quantity cm3/ : 121.0...125.0
1000 s: (118.0...128.0)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 61.0...63.0
1000 s: (58.0...66.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10
Speed rpm : 1450...1460

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0...165.0
1000 s: (131.0...169.0)

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.10...4.30
Del.quantity cm3/ : 11.0...15.0
1000 s: (9.0...17.0)
Spread cm3 : 3.00
1000 s: (6.00)

Remarks:

APPLICATION

Navy

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PEN
 Edition : 21.01.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 876 345
 Injection pump
 Pump designation : PE6P120A32ORS3301
 EP type number : 0 411 826 805
 Governor
 Governor design. : RSV250...1100POA374
 -12
 Governor no. : 0 421 833 375
 Customer-spec. information
 Customer : PENTA
 Engine : TAMO 102 A

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 019
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 075
 Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 3.40...3.50
 : (3.35...3.55)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100
 Rack travel in mm : 12.70...12.80
 Del. quantity cm³/ : 26.6...26.8
 100 s: (26.3...27.1)
 Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 250.0
 Rack travel in mm : 6.0...6.2
 Del. quantity cm³/ : 2.1...2.6
 100 s: (1.8...2.8)
 Spread cm³ : 0.5
 100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...1.40

Governor spring pre-tension
 Click setting x : 2.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100
 Aneroid pressure h: 1500
 Del. quantity : 266.0...268.0
 1000 : (263.0...271.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Control lever
 position degrees: 90...98

Testing:
 1st rack travel in: 11.70
 Speed rpm : 1115...1125

2nd rack travel in: 4.00
Speed rpm : 1175...1205
3rd rack travel in: 4.00
Speed rpm : 1185...1215
4th rack travel in: 1350
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 65...73
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 5.6
Speed rpm : 250
Rack travel in mm : 6.00...6.20
Rack travel in mm : 2.00
Speed rpm : 340...400

Aneroid/Altitude
Compensator Test

1st version:

Setting
Speed rpm : 500
Pressure hPa : 1500
Rack travel mm : 12.70...12.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.10...8.30
2nd pressure hPa : 160
Rack travel in m: 8.30...8.40
3rd pressure hPa : 980
Rack travel in m: 11.90...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500
Speed rpm : 700
Del.quantity cm³/ : 284.0...290.0
1000 s: (281.0...293.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm³/ : 149.0...151.0
1000 s: (146.0...154.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.70

Speed rpm : 1115...1125

LOW IDLE

Speed rpm : 250
Rack travel in mm : 6.00...6.20
Del.quantity cm³/ : 21.0...26.0
1000 s: (18.5...28.5)
Spread cm³ : 5.00
1000 s: (7.00)

Remarks:

:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0.. 3.5 mm

Below-ground operation

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PEN
 Edition : 09.02.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 876 745
 Injection pump
 Pump designation : PE6P110A320RS3152
 EP type number : 0 411 816 746
 Governor
 Governor design. : RSV200...1100P1A515
 Governor no. : 0 421 833 209

Customer spec. information
 Customer : VOLVO-PENTA

Engine : TD100G

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness : 6.00x1.50x600
 x Length mm

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.60...12.70

Del. quantity cm³/ : 17.5...17.7

100 s : (17.2...18.0)

Spread cm³ : 0.4

100 s : (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 4.0...4.2

Del. quantity cm³/ : 1.8...2.2

100 s : (-)

Spread cm³ : 0.3

100 s : (0.6)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del. quantity : 175.0...177.0

1000 : (172.0...180.0)

Spread cm³ : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 53...61

Testing:

1st rack travel in: 11.60

Speed rpm : 1160...1170

2nd rack travel in: 4.00

Speed rpm : 1200...1230

4th rack travel in: 1340

Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 6...14
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 3.6
Speed rpm : 250
Rack travel in mm : 4.00...4.20
Rack travel in mm : 2.00
Speed rpm : 290...350

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 12.60...12.70

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m : 9.80...9.90
2nd pressure hPa : 640
Rack travel in m : 12.40...12.50
3rd pressure hPa : 250
Rack travel in m : 10.10...10.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm³/ : 122.0...124.50
1000 s: (119.0...127.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.60
Speed rpm : 1160...1170

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 160.0...190.0
1000 s: (156.0...194.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.00...4.20
Del.quantity cm³/ : 18.0...22.0
1000 s: (-)
Spread cm³ : 3.00
1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PEN 12,1 b4
 Edition : 18.12.92
 Replaces : 10.91
 Test oil : ISO-4113

Combination no. : 0 401 876 789

Injection pump
 Pump designation : PE6P120A320RS3189
 EP type number : 0 411 826 759
 Governor
 Governor design. : RSV650...750P4A421-9
 Governor no. : 0 421 833 364

Customer-spec. information
 Customer : PENTA

Engine : TD710G

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.60...2.70
 : (2.55...2.75)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 8.00...8.10

Del. quantity cm³/ : 16.1...16.3
 100 s: (15.8...16.6)

Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 650.0
 Rack travel in mm : 3.1...3.3
 Del. quantity cm³/ : 1.9...2.5
 100 s: (1.7...2.7)

Spread cm³ : 0.5
 100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Del. quantity : 161.0...163.0
 1000 : (158.0...166.0)

Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Control lever
 position degrees: 90...98

Testing:
 1st rack travel in: 7.00
 Speed rpm : 750...755
 2nd rack travel in: 4.00
 Speed rpm : 772...785

4th rack travel in: 900
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 85...93
Setting point w/out bumper spring
Speed rpm : 650
Rack travel in mm : 3.2
Speed rpm : 650
Rack travel in mm : 3.10...3.30
Rack travel in mm : 2.00
Speed rpm : 630...690

SET IDLE AUXILIARY SPRING
Rack travel in mm : 2.00

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 7.00
Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 480.0...520.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 650
Rack travel in mm : 3.10...3.30
Del.quantity cm³/ : 19.0...25.0
1000 s: (17.0...27.0)
Spread cm³ : 5.00
1000 s: (7.00)

Remarks:

:

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PEN
 Edition : 21.01.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 876 794
 Injection pump
 Pump designation : PE6P120A320RS3206
 EP type number : 0 411 826 773
 Governor
 Governor design. : RSV250...1100P1A560
 Governor no. : 0 421 833 398

Customer-spec. information
 Customer : PENTA

Engine : TAD 730 P

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 019
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 075
 Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 3.60...3.70
 : (3.55...3.75)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 8.80...8.90
 Del.quantity cm³/ : 17.9...18.1
 100 s : (18.6...19.4)
 Spread cm³ : 0.5
 100 s : (0.9)

2nd speed rpm : 250.0
 Rack travel in mm : 5.1...5.3
 Del.quantity cm³/ : 1.7...2.3
 100 s : (1.4...2.6)
 Spread cm³ : 0.5
 100 s : (0.7)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 1200
 Del.quantity : 179.0...181.0
 1000 : (186.0...194.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Control lever
 position degrees: 115...123

Testing:
 1st rack travel in: 7.80
 Speed rpm : 1140...1150
 2nd rack travel in: 4.00

Speed rpm : 1180...1210
4th rack travel in: 1300
Speed rpm : 0.30...1.40

respect to setting at least 0.1 mm

LOW IDLE 1

Control lever
position degrees: 78...86
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 5.2
Speed rpm : 250
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 300...360

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 700
Pressure hPa : 1200
Rack travel mm : 8.80...8.90

Measurement

Speed 1/min : 700

1st pressure hPa : -
Rack travel in m: 7.10...7.30
2nd pressure hPa : 150
Rack travel in m: 7.30...7.40 *

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm³/ : 130.0...132.0
1000 s: (127.0...135.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 7.80
Speed rpm : 1140...1150

Remarks:

:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

* Increase in control-rod travel with

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 03.02.73
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 401 876 796

Injection pump
 Pump designation : PE6P120A320LS3815-13
 EP type number : 0 411 826 782
 Governor
 Governor design. : RSV675...1050POA820
 -12
 Governor no. : 0 421 833 401

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM441A

1st version kW : 162.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70
 : (3.55...3.75)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1080

Rack travel in mm : 10.50...10.60

Del. quantity cm³/ : 15.9...16.1

100 s: (15.6...16.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 675.0

Rack travel in mm : 3.1...3.7

Del. quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1080

Del. quantity : 159.0...161.0

1000 : (156.0...164.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 89...97

Testing:
1st rack travel in: 9.50
Speed rpm : 1110...1120
2nd rack travel in: 4.00
Speed rpm : 1140...1158
4th rack travel in: 1250
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 73...81
Setting point w/out bumper spring
Speed rpm : 675
Rack travel in mm : 3.4

Testing:
Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 675
Rack travel in mm : 3.30...3.50
Rack travel in mm : 2.00

SET IDLE AUXILIARY SPRING
Rack travel in mm : 2.00

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1080
Rack travel in m: 10.50...10.60
2nd speed rpm : 700
Rack travel in m: 12.50...12.70
3rd speed rpm : 975
Rack travel in m: 11.30...11.50
4th speed rpm : 500
Rack travel in m: 12.50...12.70

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 700
Del.quantity cm³/ : 201.0...205.0
1000 s: (198.0...208.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.50
Speed rpm : 1110...0

4th version
1mm rack travel less than

full load rack tr: 9.50
Speed rpm : 1110...1120

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 190.0...210.0
1000 s: (186.0...214.0)

Remarks:

In order to adjust and test the EP combination, set full-load speed regul. at 1110...1120 1/min. Then set speed regul. to 1060...1070 1/min again.

APPLICATION

Forage harvester

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 05.02.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 876 797
 Injection pump
 Pump designation : PE6P120A320LS3815-13
 EP type number : 0 411 826 782
 Governor
 Governor design. : RSV350...1000POA827
 -3
 Governor no. : 0 421 833 402

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM441A

1st version kw : 177.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 105...125

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

L25

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70
 : (3.55...3.75)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 980

Rack travel in mm : 11.00...11.10

Del. quantity cm³/ : 17.1...17.3

100 s: (16.8...17.6)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 4.7...5.3

Del. quantity cm³/ : 1.4...2.2

100 s: (1.1...2.5)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 980

Del. quantity : 171.0...173.0

1000 : (168.0...176.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 95...103

Testing:

1st rack travel in: 10.00
Speed rpm : 1030...0
2nd rack travel in: 4.00
Speed rpm : 1100...0
4th rack travel in: 1250
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 72...80
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.0

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 350
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 380...440

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700
Del. quantity cm³/ : 172.0...176.0
1000 s: (169.0...179.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.00
Speed rpm : 1030...1040

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 190.0...210.0
1000 s: (186.0...214.0)

Remarks:

: LIEBHERR-TELF5

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE
 Edition : 03.04.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 878 714
 Injection pump
 Pump designation : PE8P110A320LS3853
 EP type number : 0 411 818 720
 Governor
 Governor design. : RSV400...900P1A544
 Governor no. : 0 421 833 326

Customer-spec. information
 Customer : LIEBHERR

Engine : D 9308 T

1st version kW : 260.0
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90
 : (3.75...3.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 3-
 5- 4

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 890

Rack travel in mm : 13.80...13.90

Del. quantity cm³/ : 17.5...17.8

100 s : (17.2...18.0)

Spread cm³ : 0.4

100 s : (0.7)

2nd speed rpm : 400.0

Rack travel in mm : 5.8...6.0

Del. quantity cm³/ : 1.3...1.8

100 s : (1.0...2.0)

Spread cm³ : 0.4

100 s : (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 890

Del. quantity : 175.0...178.0

1000 : (172.5...180.5)

Spread cm³ : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 87...95

Testing:

1st rack travel in: 12.80

Speed rpm : 930...940

2nd rack travel in: 4.00

Speed rpm : 945...975
3rd rack travel in: 4.00
Speed rpm : 950...980
4th rack travel in: 1120
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 64...72
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.4
Speed rpm : 400
Rack travel in mm : 5.30...5.50
Rack travel in mm : 2.00
Speed rpm : 450...510

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 890
Rack travel in m: 13.80...13.90
2nd speed rpm : 500
Rack travel in m: 13.80...14.00
3rd speed rpm : 420
Rack travel in m: 15.00...15.60

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm3/ : 176.0...184.0
1000 s: (173.0...187.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 12.80
Speed rpm : 930...940

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 150.0...170.0
1000 s: (146.0...174.0)

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.80...6.00
Del.quantity cm3/ : 13.0...18.0
1000 s: (10.5...20.5)
Spread cm3 : 4.50
1000 s: (7.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE
 Edition : 31.07.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 878 717A
 Injection pump
 Pump designation : PE8P110A320LS3853-1
 EP type number : 0 411 818 726
 Governor
 Governor design. : RSV400...1000P1A554
 Governor no. : 0 421 833 376

Cust. part no. : 9273614

Customer-spec. information
 Customer : LIEBHERR

Engine : D 9308 TI

1st version kw : 288.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 207...210

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90
 : (3.75...3.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 8- 7- 2- 6- 3-
 5- 4

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 900
 Rack travel in mm : 14.60...14.70
 Del. quantity cm³/ : 19.6...19.8
 100 s: (19.3...20.1)
 Spread cm³ : 0.4
 100 s: (0.7)

2nd speed rpm : 400.0
 Rack travel in mm : 5.8...6.0
 Del. quantity cm³/ : 1.2...1.8
 100 s: (0.9...1.2)
 Spread cm³ : 0.6
 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 900
 Aneroid pressure h: 1500
 Del. quantity : 196.0...198.0
 1000 : (193.0...201.0)
 Spread cm³ : 4.00
 1000 : (7.50)

RATED SPEED

1st version
 Control lever
 position degrees: 95...103

Testing:
 1st rack travel in: 13.60

Speed rpm : 940...950
2nd rack travel in: 4.00
Speed rpm : 985...1015
3rd rack travel in: 4.00
Speed rpm : 1010...1040
4th rack travel in: 1100
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 72...78
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.4
Speed rpm : 400
Rack travel in mm : 5.80...6.00
Rack travel in mm : 2.00
Speed rpm : 490...550

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 14.60...14.70
2nd speed rpm : 500
Rack travel in m: 14.60...14.80
3rd speed rpm : 350
Rack travel in m: 15.80...16.40

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1500
Rack travel mm : 14.60...14.70

Measurement

Speed 1/min : 600
1st pressure hPa : -
Rack travel in m: 13.60...13.80
2nd pressure hPa : 760
Rack travel in m: 14.20...14.40
3rd pressure hPa : 690
Rack travel in m: 13.90...14.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 550
Del.quantity cm³/ : 171.0...173.0
1000 s: (168.0...176.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.60
Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 150.0...170.0
1000 s: (146.0...174.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.80...6.00
Del.quantity cm³/ : 12.0...18.0
1000 s: (9.0...12.0)
Spread cm³ : 6.00
1000 s: (10.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE
 Edition : 27.11.92
 Replaces : 06.92
 Test oil : ISO-4113
 Combination no. : 0 401 878 717B
 Injection pump
 Pump designation : PE8P110A320LS3853
 EP type number : 0 411 818 720
 Governor
 Governor design. : RSV400...1000P1A554
 Governor no. : 0 421 833 376

Customer-spec. information
 Customer : LIEBHERR

Engine : D 9308 T

1st version kw : 255.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 207...210

Test Lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90
 : (3.75...3.95)

Rack travel in mm : 9.00...12.00

M03

Firing order : 1- 8- 7- 2- 6- 3-
 5- 4

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.40...13.50

Del.quantity cm³/ : 16.6...16.8

100 s: (16.3...17.1)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 400.0

Rack travel in mm : 5.9...6.1

Del.quantity cm³/ : 1.2...1.8

100 s: (0.9...2.1)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 1500

Del.quantity : 166.0...168.0

1000 : (163.0...171.0)

Spread cm³ : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 96...102

Testing:

1st rack travel in: 12.40

Speed rpm : 940...950

2nd rack travel in: 4.00

Speed rpm : 980...1020

3rd rack travel in: 4.00
Speed rpm : 1020...1040
4th rack travel in: 1100
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 75...83
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.7
Speed rpm : 400
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 430...490

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 13.40...13.50
2nd speed rpm : 500
Rack travel in m: 13.40...13.60
3rd speed rpm : 350
Rack travel in m: 14.60...15.20

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 550
Pressure hPa : 1500
Rack travel mm : 13.40...13.50

Measurement

Speed 1/min : 550

1st pressure hPa : -
Rack travel in m: 12.50...12.60
2nd pressure hPa : 620
Rack travel in m: 12.90...13.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 550
Del.quantity cm3/ : 152.0...154.0
1000 s: (149.0...157.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

MD4

full load rack tr: 12.40
Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 150.0...170.0
1000 s: (146.0...174.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.90...6.10
Del.quantity cm3/ : 12.0...18.0
1000 s: (9.0...21.0)
Spread cm3 : 6.00
1000 s: (10.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 10,0 e1
 Edition : 11.01.93
 Replaces : 12.90
 Test oil : ISO-4113

Combination no. : 0 402 035 028

Injection pump
 Pump designation : PES5P120A720/3LS528
 EF type number : 0 412 025 022
 Governor
 Governor design. : RQV325...1000PA876
 -10
 Governor no. : 0 421 813 900

Customer-spec. information
 Customer : MAN

Engine : D2865LF/LU05

1st version kW : 198.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

M05

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 13.00...14.00
 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.60...11.70

Del. quantity cm³/ : 22.0...22.2
 100 s: (21.7...22.5)

Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 325.0
 Rack travel in mm : 4.3...4.7
 Del. quantity cm³/ : 1.7...2.3
 100 s: (1.4...2.6)

Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1045
 travel mm : 9.60...9.80
 2nd speed rpm : 325
 travel mm : 0.70...1.10
 3rd speed rpm : 550
 travel mm : 3.50...4.10
 4th speed rpm : 800
 travel mm : 6.50...6.90
 5th speed rpm : 1300
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1080
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1000

Aneroid pressure h: 1000
Del.quantity : 220.0...222.0
1000 : (217.0...225.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 296...304

Testing:
1st rack travel in: 10.60
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1100...1130
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 252...260

Testing:
Speed rpm : 100
Minimum rack travel: 6.10
Speed rpm : 300
Rack travel in mm : 4.40...4.60

CONSTANT REGULATION

Speed rpm : 340...460

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 11.60...11.70

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.00...9.20
2nd pressure hPa : 150
Rack travel in m: 9.60...9.70
3rd pressure hPa : 390
Rack travel in m: 10.90...11.20

START CUT-OUT

Speed 1/min : 245 (265)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 750
Del.quantity cm3/ : 217.0...223.0
1000 s: (214.0...226.0)
Aneroid pressure h: 1000
Speed rpm : 550
Del.quantity cm3/ : 209.0...217.0
1000 s: (206.0...220.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.60
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 190.0...210.0
1000 s: (186.0...214.0)

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.30...4.70
Del.quantity cm3/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 3-7122

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 5
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 10,0 d1
 Edition : 11.01.93
 Replaces : 07.92
 Test oil : ISO-4113

Combination no. : 0 402 035 029

Injection pump
 Pump designation : PES5P120A720/3LS528
 EP type number : 0 412 025 022
 Governor
 Governor design. : RQ325/1000PA813-20
 Governor no. : 0 421 801 567

Customer-spec. information
 Customer : MAN

Engine : D2865LF/LU05

1st version kW : 198.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 13.00...14.00
 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.60...11.70

Del.quantity cm3/ : 22.0...22.2

100 s: (21.7...22.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.3...4.7

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1000

Del.quantity : 220.0...222.0

1000 : (217.0...225.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 10.60

Speed rpm : 1045...1060
2nd rack travel in: 4.00
Speed rpm : 1120...1150
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 4.5

Testing:

Speed rpm : 100
Minimum rack travel: 6.00
Speed rpm : 325
Rack travel in mm : 4.40...4.60
Rack travel in mm : 2.00
Speed rpm : 360...400

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 12.10...12.20
2nd speed rpm : 550
Rack travel in m: 12.50...12.90
3rd speed rpm : 825
Rack travel in m: 12.30...12.50

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 11.60...11.70

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.00...9.20
2nd pressure hPa : 150
Rack travel in m: 9.60...9.70
3rd pressure hPa : 390
Rack travel in m: 10.90...11.20

START CUT-OUT

Speed 1/min : 245 (265)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 750

Del.quantity cm³/ : 217.0...223.0
1000 s: (214.0...226.0)
Aneroid pressure h: 1000
Speed rpm : 550
Del.quantity cm³/ : 209.0...217.0
1000 s: (206.0...220.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 134.0...136.0
1000 s: (131.0...139.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.60
Speed rpm : 1045...1060

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 190.0...210.0
1000 s: (186.0...214.0)

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.30...4.70
Del.quantity cm³/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 3-7121

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 5
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 u2
 Edition : 09.02.93
 Replaces : 21.09.90
 Test oil : ISO-4113

Combination no. : 0 402 036 736

Injection pump
 Pump designation : PES6P120A720/3LS3255
 EP type number : 0 412 026 739
 Governor
 Governor design. : RQ300/1100PA813-12
 Governor no. : 0 421 801 518

Customer-spec. information
 Customer : MAN

Engine : D2866LF01

1st version kW : 273.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder assembly : 1 688 901 019

Opening pressure, bar : 207...210

Orifice plate diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
 : (3.65...3.85)
 Rack travel in mm : 14.50...15.50
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.90...6.10
 & maximum rack tra: 14.5...15.5
 Difference ° CS : 2.00...4.00

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 15.00...15.10

Del.quantity cm3/ : 24.2...24.4
 100 s: (23.9...24.7)

Spread cm3 : 0.5
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.0...5.4
 Del.quantity cm3/ : 1.7...2.3
 100 s: (1.4...2.6)

Spread cm3 : 0.8
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 1200
 Del.quantity : 242.0...244.0
 1000 : (239.0...247.0)

Spread cm3 : 5.00
 1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.80
Speed rpm : 1145...1160
2nd rack travel in: 4.00
Speed rpm : 1200...1230
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.2

Testing:

Speed rpm : 200
Minimum rack trave: 6.70
Speed rpm : 300
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 360...400

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 14.80...14.90
2nd speed rpm : 700
Rack travel in m: 15.40...15.60
3rd speed rpm : 900
Rack travel in m: 15.20...15.40

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 15.00...15.10

Measurement

Speed 1/min : 500
1st pressure hPa : -
Rack travel in m: 11.60...11.90
2nd pressure hPa : 110
Rack travel in m: 12.00...12.10
3rd pressure hPa : 470
Rack travel in m: 14.00...14.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

M10

1st version

Aneroid pressure h: 1200
Speed rpm : 1100
Del.quantity cm3/ : 230.0...236.0
1000 s: (227.0...239.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.80
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 210.0...230.0
1000 s: (206.0...234.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.00...5.40
Del.quantity cm3/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7889

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 6
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 u1
 Edition : 21.01.93
 Replaces : 03.92
 Test oil : ISO-4113
 Combination no. : 0 402 036 740
 Injection pump
 Pump designation : PES6P120A720/3LS3255
 EP type number : 0 412 026 739
 Governor
 Governor design. : RQ300/1000PA813-13
 Governor no. : 0 421 801 529

Customer-spec. information
 Customer : MAN

Engine : D2866LF03

1st version kW : 273.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
 : (3.65...3.85)
 Rack travel in mm : 14.50...15.50
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : (60-120-180-240-300)

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 15.00...15.10

Del.quantity cm³/ : 24.2...24.4

100 s: (23.9...24.7)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.9...5.3

Del.quantity cm³/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.60...2.10

2nd speed rpm : 550

travel mm : 5.90...6.10

3rd speed rpm : 900

travel mm : 6.10...6.30

4th speed rpm : 1070

travel mm : 6.60...7.10

5th speed rpm : 1175

travel mm : 10.10...10.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 550

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 242.0...244.0
1000 : (239.0...247.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 550
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.80
Speed rpm : 1045...1060
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.0

Testing:

Speed rpm : 200
Minimum rack travel: 6.50
Speed rpm : 300
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 360...400

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 15.00...15.10
2nd speed rpm : 700
Rack travel in m: 15.30...15.50

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 15.00...15.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.70...11.90
2nd pressure hPa : 110
Rack travel in m: 12.00...12.10
3rd pressure hPa : 470

M12

Rack travel in m: 13.70...14.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1000
Del.quantity cm³/ : 241.0...245.0
1000 s: (238.0...248.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 134.0...136.0
1000 s: (131.0...139.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.80
Speed rpm : 1045...1060

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 220.0...240.0
1000 s: (216.0...244.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.90...5.30
Del.quantity cm³/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 0-7050

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 6
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 u5
 Edition : 18.12.92
 Replaces : 08.92
 Test oil : ISO-4113
 Combination no. : 0 402 036 743
 Injection pump
 Pump designation : PES6P120A72C/3LS3255
 EP type number : 0 412 026 739
 Governor
 Governor design. : RQ300/1000PA813-19
 Governor no. : 0 421 801 561

Customer-spec. information
 Customer : MAN

Engine : D2866LF05

1st version kW : 272.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
 : (3.65...3.85)
 Rack travel in mm : 14.50...15.50
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 15.10...15.20
 Del.quantity cm³/ : 24.4...24.6
 100 s: (24.1...24.9)
 Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 4.8...5.2
 Del.quantity cm³/ : 1.7...2.3
 100 s: (1.4...2.6)
 Spread cm³ : 0.8
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 550
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 1200
 Del.quantity : 244.0...246.0
 1000 : (241.0...249.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 550
 Rack travel in mm : 20.0

Testing:
 1st rack travel in: 14.10

Speed rpm : 1045...1060
2nd rack travel in: 4.07
Speed rpm : 1155...1185
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.0

Testing:

Speed rpm : 200
Minimum rack travel: 6.50
Speed rpm : 300
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 360...400

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 15.10...15.20
2nd speed rpm : 700
Rack travel in m: 15.50...15.70

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 15.10...15.20

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.80...12.00
2nd pressure hPa : 110
Rack travel in m: 12.10...12.20
3rd pressure hPa : 470
Rack travel in m: 13.80...14.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1000
Del.quantity cm³/ : 241.0...247.0
1000 s: (238.0...250.0)
Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm³/ : 134.0...136.0
1000 s: (131.0...139.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 14.10
Speed rpm : 1045...1060

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 190.0...210.0
1000 s: (186.0...214.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.80...5.20
Del.quantity cm³/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 3-7037

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 6
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
 Edition : 18.12.92
 Replaces : 07.92
 Test oil : ISO-4113

Combination no. : 0 402 036 752

Injection pump
 Pump designation : PES6P120A720/3LS3255
 -1

EP type number : 0 412 026 756
 Governor
 Governor design. : RQV300...1000PA876
 -13

Governer no. : 0 421 814 010

Customer-spec. information
 Customer : MAN

Engine : D2866LE102

1st version kW : 260.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

M15

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
 : (3.65...3.85)

Rack travel in mm : 14.50...15.50

Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300
 Phasing :
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.70...14.80

Del. quantity cm³/ : 23.3...23.5
 100 s : (23.0...23.8)

Spread cm³ : 0.5
 100 s : (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 4.8...5.2
 Del. quantity cm³/ : 1.7...2.3
 100 s : (1.4...2.6)

Spread cm³ : 0.8
 100 s : (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1045
 travel mm : 9.90...10.10

2nd speed rpm : 300
 travel mm : 1.50...1.70

3rd speed rpm : 500
 travel mm : 3.30...3.90

4th speed rpm : 800
 travel mm : 6.80...7.20

5th speed rpm : 1300
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1110

Rack travel in mm : 12.40...15.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700
Aneroid pressure h: 1200
Del.quantity : 233.0...235.0
1000 : (230.0...238.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control Lever
position degrees: 294...302

Testing:
1st rack travel in: 13.70
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1135...1165
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever
position degrees: 251...259

Testing:
Speed rpm : 200
Minimum rack travel: 6.50
Speed rpm : 300
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

Speed rpm : 290...400

TORQUE CONTROL

Dimension a mm : 0.20
Torque control curve - 1st version
1st speed rpm : 700
Rack travel in m: 14.70...14.80
2nd speed rpm : 1000
Rack travel in m: 14.50...14.70

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 14.70...14.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.40...11.60
2nd pressure hPa : 210
Rack travel in m: 11.80...11.90
3rd pressure hPa : 570

M16

Rack travel in m: 13.40...13.80

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1000
Del.quantity cm³/ : 230.0...236.0
1000 s: (227.0...239.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 130.0...132.0
1000 s: (127.0...135.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.70
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 190.0...210.0
1000 s: (186.0...214.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.80...5.20
Del.quantity cm³/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 3-7191

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 6
start of delivery

APPLICATION

Special-purpose vehicle

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA
 Edition : 03.04.92
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 046 079

Injection pump
 Pump designation : PES6P120A820LS249
 EP type number : 0 412 026 024
 Governor
 Governor design. : RGV300...1000PA204-4
 R
 Governor no. : 0 421 813 121

Customer-spec. information
 Customer : IVECO-FIAT

Engine : 8217.12.024

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 443 022

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 060

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.00x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Prestroke mm : 2.00...2.10
 : (1.95...2.15)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 7.50...7.60

Del. quantity cm³/ : 12.2...12.4
 100 s : (11.9...12.7)

Spread cm³ : 0.5
 100 s : (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 6.0...6.1
 Del. quantity cm³/ : 1.6...2.2
 100 s : (1.3...2.5)

Spread cm³ : 0.6
 100 s : (0.9)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1000
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1000
 Del. quantity : 122.0...124.0
 1000 : (119.0...127.0)

Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Control lever
 position degrees: 53...61

Testing:
 1st rack travel in: 6.50
 Speed rpm : 1040...1050
 2nd rack travel in: 4.00
 Speed rpm : 1080...1110
 4th rack travel in: 1300
 Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
 position degrees: 10...18

Testing:

Speed rpm : 100
Minimum rack trave: 9.00
Speed rpm : 300
Rack travel in mm : 6.00...6.10
Rack travel in mm : 2.00
Speed rpm : 415...475

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 6.50
Speed rpm : 1040...1050

Remarks:

:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 9,8 a 6
 Edition : 23.10.92
 Replaces : 09.92
 Test oil : ISO-4113

Combination no. : 0 402 046 313

Injection pump
 Pump designation : PES6P120A32ORS419
 EP type number : 0 412 026 037
 Governor
 Governor design. : RQV275...1050PA495-8
 Governor no. : 0 421 813 482

Customer-spec. information
 Customer : RVI

Engine : MIDS062045

1st version kW : 169.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 10.40...10.50

Del.quantity cm³/ : 18.0...18.2
 100 s : (17.7...18.5)

Spread cm³ : 0.5
 100 s : (0.9)

2nd speed rpm : 275.0
 Rack travel in mm : 5.2...5.4
 Del.quantity cm³/ : 2.3...2.7
 100 s : (2.0...3.0)

Spread cm³ : 0.8
 100 s : (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 1.00...1.20

2nd speed rpm : 450
 travel mm : 3.30...3.80

3rd speed rpm : 800
 travel mm : 5.70...6.00

4th speed rpm : 1050
 travel mm : 7.60...7.80

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1130
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1050
 Aneroid pressure h: 700
 Del.quantity : 180.5...182.5
 1000 : (177.5...185.5)

Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 62...70

Testing:
1st rack travel in: 9.40
Speed rpm : 1125...1135
2nd rack travel in: 4.00
Speed rpm : 1200...1230
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 8...16

Testing:
Speed rpm : 175
Minimum rack trave: 6.80
Speed rpm : 275
Rack travel in mm : 5.20...5.40

CONSTANT REGULATION
Speed rpm : 275...390

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 10.40...10.50

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.20...8.60
2nd pressure hPa : 360
Rack travel in m: 9.90...10.00
3rd pressure hPa : 160
Rack travel in m: 8.70...9.00

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 650
Del.quantity cm3/ : 184.0...189.0
1000 s: (181.0...191.0)
Aneroid pressure h: -

M20

Speed rpm : 500
Del.quantity cm3/ : 112.5...114.5
1000 s: (109.5...117.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.40
Speed rpm : 1125...1135

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 151.0...171.0
1000 s: (147.0...175.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.20...5.40
Del.quantity cm3/ : 23.5...27.5
1000 s: (20.5...30.5)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

:
Start-of-delivery mark 9.5° cam angle
after start of delivery cyl. 1

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 12,0 f1
 Edition : 22.01.93
 Replaces : 02.92
 Test oil : ISO-4113
 Combination no. : 0 402 046 758
 Injection pump
 Pump designation : PES6P120A320RS3139
 EP type number : 0 412 026 718
 Governor
 Governor design. : RQV275...950PA728-1
 Governor no. : 0 421 813 465

Customer-spec. information
 Customer : RVI

Engine : MIDR 063540

1st version kW : 243.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.50...12.60

Del.quantity cm³/ : 19.7...19.9

100 s: (19.4...20.2)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 5.2...5.6

Del.quantity cm³/ : 2.2...2.6

100 s: (1.9...2.9)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275
 travel mm : 1.30...1.70

2nd speed rpm : 450
 travel mm : 3.30...3.70

3rd speed rpm : 800
 travel mm : 5.60...6.00

4th speed rpm : 950
 travel mm : 6.70...6.90

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1125

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 197.0...199.0

1000 : (194.0...202.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 59...67

Testing:
1st rack travel in: 11.50
Speed rpm : 1020...1030
2nd rack travel in: 4.00
Speed rpm : 1155...1185
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 8...16

Testing:
Speed rpm : 200
Minimum rack travel: 7.10
Speed rpm : 275
Rack travel in mm : 5.30...5.50

CONSTANT REGULATION
Speed rpm : 300...400

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 12.50...12.60

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.10...9.50
2nd pressure hPa : 200
Rack travel in m: 10.00...10.10
3rd pressure hPa : 520
Rack travel in m: 11.60...11.90

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 950
Del.quantity cm3/ : 198.0...204.0
1000 s: (195.0...207.0)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 118.0...120.0
1000 s: (115.0...123.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.50
Speed rpm : 1020...1030

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 155.0...185.0
1000 s: (151.0...189.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.20...5.60
Del.quantity cm3/ : 22.0...26.0
1000 s: (19.0...29.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

:
Start-of-delivery mark 9° cam angle
after start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 9,6 n
 Edition : 11.01.93
 Replaces : 8.87
 Test oil : ISO-4113

Combination no. : 0 402 046 759

Injection pump
 Pump designation : PES6P110A720RS3104
 EP type number : 0 412 016 712
 Governor
 Governor design. : RQ900PA738
 Governor no. : 0 421 801 278

Customer-spec. information
 Customer : KHD

Engine : BF6L413FR/C

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.60...12.70

Del. quantity cm³/ : 14.7...14.9

100 s: (14.4...15.2)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 7.1...7.3

Del. quantity cm³/ : 1.3...1.9

100 s: (1.0...2.1)

Spread cm³ : 0.4

100 s: (0.7)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Del. quantity : 147.0...149.0

1000 : (144.0...152.0)

Spread cm³ : 4.00

1000 : (7.50)

RATED SPEED

1st version

Testing:

1st rack travel in: 11.60

Speed rpm : 900...905

2nd rack travel in: 5.50

Speed rpm : 936...945

4th rack travel in: 1050

Speed rpm : 0.00...1.00

START CUT-OUT

Speed 1/min : 750 (0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.60

Speed rpm : 900...905

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 170.0...200.0

Remarks:

:

APPLICATION

Generator set



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 9,6 u
 Edition : 01.93
 Replaces : 10.88
 Test oil : ISO-4113
 Combination no. : 0 402 046 783
 Injection pump
 Pump designation : PES6P110A72ORS31C4
 EP type number : 0 412 016 712
 Governor
 Governor design. : RQV300...1150PA850
 Governor no. : 0 421 813 598

Customer-spec. information
 Customer : KHD

Engine : BF6L513R

1st version kW : 177.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1150
 Rack travel in mm : 13.40...13.50
 Del.quantity cm³/ : 15.1...15.3
 100 s : (14.8...15.6)

Spread cm³ : 0.4
 100 s : (0.7)

2nd speed rpm : 300.0
 Rack travel in mm : 7.9...8.1
 Del.quantity cm³/ : 1.6...2.2
 100 s : (1.3...2.4)
 Spread cm³ : 0.4
 100 s : (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.30...1.40
 2nd speed rpm : 390
 travel mm : 2.40...2.70
 3rd speed rpm : 460
 travel mm : 2.80...3.20
 4th speed rpm : 1190
 travel mm : 8.40...8.50
 5th speed rpm : 1290
 travel mm : 9.40...9.70

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1190
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1150
 Aneroid pressure h: 900
 Del.quantity : 151.0...153.0
 1000 : (148.0...156.0)
 Spread cm³ : 4.00
 1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:
1st rack travel in: 12.40
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1310...1340
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 83...91

Testing:
Speed rpm : 100
Minimum rack trave: 9.40
Speed rpm : 300
Rack travel in mm : 7.90...8.10

CONSTANT REGULATION
Speed rpm : 320...480

TORQUE CONTROL
Dimension a mm : 0.10
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 13.40...13.50
2nd speed rpm : 600
Rack travel in m: 13.50...13.70
3rd speed rpm : 950
Rack travel in m: 13.45...13.60

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 450
Pressure hPa : 900
Rack travel mm : 13.60...13.70

Measurement
Speed 1/min : 450

1st pressure hPa : -
Rack travel in m: 12.40...12.60
2nd pressure hPa : 420
Rack travel in m: 13.20...13.30
3rd pressure hPa : 360
Rack travel in m: 12.70...12.90

START CUT-OUT

Speed 1/min : 250 (270)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 600
Del.quantity cm3/ : 156.0...160.0
1000 s: (154.0...162.0)
Aneroid pressure h: -
Speed rpm : 450
Del.quantity cm3/ : 123.0...125.0
1000 s: (120.0...128.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.40
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 170.0...200.0
1000 s: (166.0...204.0)

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 9,6 w
 Edition : 21.01.93
 Replaces : 11.87
 Test oil : ISO-4113

Combination no. : 0 402 046 792

Injection pump
 Pump designation : PES6P110A72ORS3104
 EP type number : 0 412 016 712
 Governor
 Governor design. : RQV400...1100PA882
 Governor no. : 0 421 813 681

Customer-spec. information

Customer : KHD

Engine : BF6L513R

1st version kW : 176.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

M27

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.90...13.00

Del. quantity cm³/ : 14.1...14.3

100 s : (13.8...14.6)

Spread cm³ : 0.4

100 s : (0.7)

2nd speed rpm : 400.0

Rack travel in mm : 7.5...7.7

Del. quantity cm³/ : 1.2...1.8

100 s : (1.0...2.0)

Spread cm³ : 0.4

100 s : (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 400
 travel mm : 0.80...1.20

2nd speed rpm : 600
 travel mm : 2.80...3.60

3rd speed rpm : 900
 travel mm : 5.60...6.20

4th speed rpm : 1140
 travel mm : 8.20...8.40

5th speed rpm : 1230
 travel mm : 9.50...9.90

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 700

Del. quantity : 141.0...143.0

1000 : (138.0...146.0)

Spread cm³ : 4.00

1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:
1st rack travel in: 11.90
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1220...1250
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 86...94

Testing:
Speed rpm : 300
Minimum rack trave: 9.20
Speed rpm : 400
Rack travel in mm : 7.50...7.70

CONSTANT REGULATION
Speed rpm : 400...650

TORQUE CONTROL
Dimension a mm : 0.40
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.90...13.00
2nd speed rpm : 650
Rack travel in m: 13.20...13.30
3rd speed rpm : 750
Rack travel in m: 13.10...13.20
4th speed rpm : 950
Rack travel in m: 12.90...13.10

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 450
Pressure hPa : 700
Rack travel mm : 13.30...13.40

Measurement
Speed 1/min : 450

1st pressure hPa : -
Rack travel in m: 12.30...12.50
2nd pressure hPa : 400
Rack travel in m: 13.10...13.20
3rd pressure hPa : 300
Rack travel in m: 12.70...12.90

START CUT-OUT

Speed 1/min : 320 (340)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 650
Del.quantity cm3/ : 148.0...152.0
1000 s: (145.0...155.0)
Aneroid pressure h: -
Speed rpm : 450
Del.quantity cm3/ : 123.0...125.0
1000 s: (120.0...128.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.90
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 170.0...200.0
1000 s: (166.0...204.0)

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

APPLICATION

wheel loader

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 9,6 v 1
 Edition : 11.01.93
 Replaces : 07.88
 Test oil : ISO-4113
 Combination no. : 0 402 046 794
 Injection pump
 Pump designation : PES6P110A720RS3104
 EP type number : 0 412 016 712
 Governor
 Governor design. : RQV300...1075PA862-1
 Governor no. : 0 421 813 684

Customer-spec. information
 Customer : KHD

Engine : BF6L513 R/C

1st version kW : 150.0
 Rated speed : 2150

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

N01

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1075
 Rack travel in mm : 12.40...12.50
 Del. quantity cm³/ : 13.1...13.3
 100 s: (12.8...13.6)
 Spread cm³ : 0.4
 100 s: (0.7)

2nd speed rpm : 300.0
 Rack travel in mm : 7.6...7.8
 Del. quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.4)
 Spread cm³ : 0.4
 100 s: (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.10...1.50
 2nd speed rpm : 450
 travel mm : 2.60...3.20
 3rd speed rpm : 700
 travel mm : 4.80...5.40
 4th speed rpm : 1110
 travel mm : 7.90...8.10
 5th speed rpm : 1230
 travel mm : 9.00...9.40

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1140
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1075
 Del. quantity : 131.0...133.0
 1000 : (128.0...136.0)
 Spread cm³ : 4.00
 1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 115...123

Testing:
1st rack travel in: 11.40
Speed rpm : 1110...1120
2nd rack travel in: 4.00
Speed rpm : 1220...1250
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 82...90

Testing:
Speed rpm : 100
Minimum rack trave: 9.10
Speed rpm : 300
Rack travel in mm : 7.60...7.80

CONSTANT REGULATION
Speed rpm : 300...480

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 600
Del.quantity cm3/ : 133.0...139.0
1000 s: (130.0...142.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.40
Speed rpm : 1110...1120

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 170.0...200.0
1000 s: (166.0...204.0)

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PER 12,2 c
 Edition : 27.11.92
 Replaces : 03.89
 Test oil : ISO-4113
 Combination no. : 0 402 046 797
 Injection pump
 Pump designation : PES6P120A320RS3212
 EP type number : G 412 026 731
 Governor
 Governor design. : RGV250...1050PA794-2
 Governor no. : 0 421 813 698

Customer-spec. information
 Customer : PERKINS

Engine : EAGLE TX

1st version kw : 240.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 4- 2- 6- 3- 5

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900
 Rack travel in mm : 14.60...14.70
 Del.quantity cm³/ : 23.9...24.1
 100 s: (23.6...24.4)
 Spread cm³ : 0.6
 100 s: (0.9)

2nd speed rpm : 250.0
 Rack travel in mm : 5.9...6.1
 Del.quantity cm³/ : 1.3...1.7
 100 s: (1.0...2.0)
 Spread cm³ : 0.3
 100 s: (0.6)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 0.90...1.30
 2nd speed rpm : 350
 travel mm : 2.90...3.50
 3rd speed rpm : 700
 travel mm : 4.00...4.60
 4th speed rpm : 1000
 travel mm : 7.40...7.60
 5th speed rpm : 1100
 travel mm : 8.80...9.20

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1070
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 900
 Aneroid pressure h: 1200

Del. quantity : 239.0...241.0
1000 : (236.0...244.0)
Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 115...123

Testing:

1st rack travel in: 13.60
Speed rpm : 980...990
2nd rack travel in: 4.00
Speed rpm : 1085...1115
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 81...89

Testing:

Speed rpm : 100
Minimum rack travel: 7.50
Speed rpm : 250
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

Speed rpm : 250...550

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 14.60...14.70

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 12.20...12.30
2nd pressure hPa : 900
Rack travel in m: 14.10...14.20
3rd pressure hPa : 625
Rack travel in m: 12.90...13.10

START CUT-OUT

Speed 1/min : 170 (190)

FUEL DELIVERY CHARACTERISTICS

1st version

NO4

Aneroid pressure h: 1200
Speed rpm : 600
Del. quantity cm³/ : 238.0...242.0
1000 s: (235.0...245.0)
Aneroid pressure h: -
Speed rpm : 600
Del. quantity cm³/ : 179.0...181.0
1000 s: (176.0...184.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.60
Speed rpm : 980...990

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 130.0...170.0
1000 s: (126.0...174.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.90...6.10

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 9,6 u
 Edition : 11.01.93
 Replaces : 08.89
 Test oil : ISO-4113
 Combination no. : 0 402 046 799
 Injection pump
 Pump designation : PES6P110A72ORS3104
 EP type number : 0 412 016 712
 Governor
 Governor design. : RQV300...1075PA850-1
 Governor no. : 0 421 813 708

Customer-spec. information
 Customer : KHD

Engine : BF6L413FR/513R

1st version kw : 193.0
 Rated speed : 2150

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

N05

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1075
 Rack travel in mm : 13.40...13.50
 Del. quantity cm³/ : 14.5...14.7
 100 s : (14.2...15.0)
 Spread cm³ : 0.4
 100 s : (0.7)

2nd speed rpm : 300.0
 Rack travel in mm : 8.0...8.2
 Del. quantity cm³/ : 1.6...2.1
 100 s : (1.4...2.4)
 Spread cm³ : 0.4
 100 s : (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.20...1.40
 2nd speed rpm : 400
 travel mm : 2.70...3.30
 3rd speed rpm : 600
 travel mm : 4.20...4.80
 4th speed rpm : 1120
 travel mm : 8.40...8.60
 5th speed rpm : 1245
 travel mm : 9.60...10.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1100
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1075
 Aneroid pressure h : 900
 Del. quantity : 145.0...147.0
 1000 : (142.0...150.0)
 Spread cm³ : 4.00
 1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:
1st rack travel in: 12.40
Speed rpm : 1115...1125
2nd rack travel in: 4.00
Speed rpm : 1240...1270
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 85...93

Testing:
Speed rpm : 100
Minimum rack travel: 9.60
Speed rpm : 300
Rack travel in mm : 8.00...8.20

CONSTANT REGULATION

Speed rpm : 300...490

TORQUE CONTROL

Dimension a mm : 0.20
Torque control curve - 1st version
1st speed rpm : 1075
Rack travel in m: 13.40...13.50
2nd speed rpm : 600
Rack travel in m: 13.60...13.80
3rd speed rpm : 950
Rack travel in m: 13.50...13.60

Aneroid/Altitude Compensator Test

1st version
Setting
Speed rpm : 450
Pressure hPa : 900
Rack travel mm : 13.40...13.50

Measurement
Speed 1/min : 450

1st pressure hPa : -
Rack travel in m: 12.60...12.80
2nd pressure hPa : 420
Rack travel in m: 13.20...13.30

START CUT-OUT

Speed 1/min : 240 (260)

N06

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 600
Del.quantity cm³/ : 149.0...154.0
1000 s: (146.5...156.5)
Aneroid pressure h: -
Speed rpm : 450
Del.quantity cm³/ : 123.0...125.0
1000 s: (120.0...128.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.40
Speed rpm : 1115...1125

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 170.0...200.0
1000 s: (166.0...204.0)

Remarks:

Adjust shutoff device to 0.5...1.5 mm.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 9,6 u 2
 Edition : 11.01.93
 Replaces : 08.88
 Test oil : ISO-4113
 Combination no. : 0 402 046 801
 Injection pump
 Pump designation : PES6P110A720RS3104
 EP type number : 0 412 016 712
 Governor
 Governor design. : RQV300...1150PA850-2
 Governor no. : 0 421 813 718

Customer-spec. information
 Customer : KHD

Engine : BF6L513RC

1st version kW : 231.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

NO7

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 14.40...14.50

Del. quantity cm³/ : 17.2...17.4
 100 s : (16.9...17.7)

Spread cm³ : 0.4
 100 s : (0.7)

2nd speed rpm : 300.0
 Rack travel in mm : 7.7...7.9
 Del. quantity cm³/ : 1.6...2.1
 100 s : (1.4...2.4)
 Spread cm³ : 0.4
 100 s : (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.20...1.40
 2nd speed rpm : 350
 travel mm : 1.90...2.50
 3rd speed rpm : 650
 travel mm : 4.20...4.80
 4th speed rpm : 1195
 travel mm : 8.40...8.60
 5th speed rpm : 1320
 travel mm : 9.70...10.10

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1190
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1150
 Aneroid pressure h: 900
 Del. quantity : 172.0...174.0
 1000 : (169.0...177.0)
 Spread cm³ : 4.00
 1000 : (7.50)

RATED SPEED

1st version

Control lever
position degrees: 118...126

Testing:

1st rack travel in: 13.40
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1305...1335
4th rack travel in: 1450
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 82...90

Testing:

Speed rpm : 100
Minimum rack travel: 9.30
Speed rpm : 300
Rack travel in mm : 7.70...7.90

CONSTANT REGULATION

Speed rpm : 300...490

TORQUE CONTROL

Dimension a mm : 0.20
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 14.40...14.50
2nd speed rpm : 700
Rack travel in m: 14.60...14.80
3rd speed rpm : 950
Rack travel in m: 14.50...14.60

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 450
Pressure hPa : 900
Rack travel mm : 14.60...14.80

Measurement

Speed 1/min : 450
1st pressure hPa : -
Rack travel in m: 12.30...12.50
2nd pressure hPa : 530
Rack travel in m: 14.00...14.10
3rd pressure hPa : 390
Rack travel in m: 12.90...13.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 700
Del.quantity cm³/ : 176.0...180.0
1000 s: (173.0...183.0)
Aneroid pressure h: -
Speed rpm : 450
Del.quantity cm³/ : 123.0...125.0
1000 s: (120.0...128.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.40
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 170.0...200.0
1000 s: (166.0...204.0)

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

ZOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 9,6 u 3
 Edition : 11.01.93
 Replaces : 04.89
 Test oil : ISO-4113
 Combination no. : 0 402 046 805
 Injection pump
 Pump designation : PES6P110A720RS3104
 EP type number : 0 412 016 712
 Governor
 Governor design. : RGV300...1075PA850-3
 Governor no. : 0 421 813 743

Customer-spec. information
 Customer : KHD

Engine : BF6L413FRC/513RC

1st version kW : 198.0
 Rated speed : 2150

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1075

Rack travel in mm : 14.00...14.10

Del.quantity cm³/ : 16.4...16.6

100 s: (16.1...16.9)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 7.9...8.1

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.4)

Spread cm³ : 0.4

100 s: (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.00...1.40

2nd speed rpm : 450
 travel mm : 2.60...3.20

3rd speed rpm : 650
 travel mm : 4.70...5.30

4th speed rpm : 1110
 travel mm : 8.20...8.40

5th speed rpm : 1250
 travel mm : 9.50...9.90

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1140

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1075

Aneroid pressure h: 900

Del.quantity : 164.0...166.0

1000 : (161.0...169.0)

Spread cm³ : 4.00

1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:
1st rack travel in: 13.00
Speed rpm : 1105...1115
2nd rack travel in: 4.00
Speed rpm : 1235...1265
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 84...92

Testing:
Speed rpm : 100
Minimum rack travel: 9.40
Speed rpm : 300
Rack travel in mm : 7.90...8.10

CONSTANT REGULATION

Speed rpm : 300...520

TORQUE CONTROL

Dimension a mm : 0.20
Torque control curve - 1st version
1st speed rpm : 1075
Rack travel in m: 14.00...14.10
2nd speed rpm : 700
Rack travel in m: 14.20...14.40
3rd speed rpm : 850
Rack travel in m: 14.10...14.30

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 14.20...14.30

Measurement:
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 12.40...12.60
2nd pressure hPa : 510
Rack travel in m: 13.70...13.80
3rd pressure hPa : 375
Rack travel in m: 12.70...12.90

START CUT-OUT

Speed 1/min : 250 (270)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 700
Del.quantity cm3/ : 170.0...174.0
1000 s: (168.0...176.0)
Aneroid pressure h: -
Speed rpm : 450
Del.quantity cm3/ : 123.0...125.0
1000 s: (120.0...128.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.00
Speed rpm : 1105...1115

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 170.0...200.0
1000 s: (166.0...204.0)

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BUSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 9,6 u 4
 Edition : 11.01.93
 Replaces : 10.89
 Test oil : ISO-4113
 Combination no. : 0 402 046 806
 Injection pump
 Pump designation : PES6P110A72ORS3104
 EP type number : 0 412 016 712
 Governor
 Governor design. : RGV300...1150PA850-4
 Governor no. : G 421 813 745

Customer-spec. information
 Customer : KHD

Engine : BF6L513RC

1st version kW : 210.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1150
 Rack travel in mm : 14.00...14.10
 Del. quantity cm³/ : 16.5...16.7
 100 s : (16.2...17.0)
 Spread cm³ : 0.4
 100 s : (0.7)

2nd speed rpm : 300.0
 Rack travel in mm : 7.4...7.6
 Del. quantity cm³/ : 1.2...1.6
 100 s : (0.9...1.9)
 Spread cm³ : 0.4
 100 s : (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.00...1.40
 2nd speed rpm : 450
 travel mm : 2.60...3.20
 3rd speed rpm : 650
 travel mm : 3.30...3.90
 4th speed rpm : 1195
 travel mm : 8.30...8.50
 5th speed rpm : 1330
 travel mm : 9.70...10.10

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1190
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1150
 Aneroid pressure h: 900
 Del. quantity : 165.0...167.0
 1000 : (162.0...170.0)
 Spread cm³ : 4.00
 1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:
1st rack travel in: 13.00
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1315...1345
4th rack travel in: 14.50
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 84...92

Testing:
Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 300
Rack travel in mm : 7.40...7.60

CONSTANT REGULATION

Speed rpm : 300...550

TORQUE CONTROL

Dimension a mm : 0.20
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 14.00...14.10
2nd speed rpm : 750
Rack travel in m: 14.20...14.40
3rd speed rpm : 850
Rack travel in m: 14.10...14.30

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 14.20...14.30

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 12.10...12.30
2nd pressure hPa : 510
Rack travel in m: 13.70...13.80
3rd pressure hPa : 375
Rack travel in m: 12.60...12.90

START CUT-OUT

Speed 1/min : 250 (270)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 750
Del.quantity cm3/ : 170.0...174.0
1000 s: (168.0...176.0)
Aneroid pressure h: -
Speed rpm : 450
Del.quantity cm3/ : 123.0...125.0
1000 s: (120.0...128.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack travel: 13.00
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 170.0...200.0
1000 s: (166.0...204.0)

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,7 a17
 Edition : 26.06.92
 Replaces : 04.91
 Test oil : ISO-4113
 Combination no. : 0 402 046 807
 Injection pump
 Pump designation : PES6P110A820LS3131
 EP type number : 0 412 016 715
 Governor
 Governor design. : RQV300...1100PA916
 Governor no. : 0 421 813 748

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM447

1st version kW : 168.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.30...4.40
 : (4.25...4.45)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.40...11.50

Del.quantity cm³/ : 13.7...13.9

100 s: (13.4...14.1)

Spread cm³ : 0.4

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 7.6...7.8

Del.quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.4

100 s: (0.8)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.60...1.90

2nd speed rpm : 425

travel mm : 3.30...3.70

3rd speed rpm : 920

travel mm : 5.70...6.10

4th speed rpm : 1155

travel mm : 7.90...8.40

5th speed rpm : 1255

travel mm : 9.70...10.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1160

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 137.0...139.0
1000 : (134.5...141.5)
Spread cm³ : 4.00
1000 : (8.00)

RATED SPEED

1st version
Control lever
position degrees: 114...122

Testing:
1st rack travel in: 10.40
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 85...93

Testing:
Speed rpm : 200
Minimum rack travel: 9.20
Speed rpm : 300
Rack travel in mm : 7.60...7.80

CONSTANT REGULATION
Speed rpm : 300...500

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 600
Del.quantity cm³/ : 113.0...116.0
1000 s: (110.0...119.0)
Spread cm³ : 5.00
1000 s: (9.00)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.40
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 130.0...150.0
1000 s: (126.0...154.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 27.11.92
 Replaces : 09.92
 Test oil : ISO-4113
 Combination no. : 0 402 046 807A
 Injection pump
 Pump designation : PES6P110A820LS3131
 EP type number : 0 412 016 715
 Governor
 Governor design. : RQV300...1100PA916
 Governor no. : 0 421 813 748

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : 01447C

1st version kw : 177.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.30...4.40
 : (4.25...4.45)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.00...11.10

Del.quantity cm³/ : 13.8...14.0

100 s: (13.5...14.2)

Spread cm³ : 0.4

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 7.0...7.6

Del.quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.4

100 s: (0.8)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.10...1.40

2nd speed rpm : 450

travel mm : 3.40...3.80

3rd speed rpm : 1150

travel mm : 7.90...8.30

4th speed rpm : 1225

travel mm : 9.10...9.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1140

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 138.0...140.0

1000 : (135.5...142.5)

Spread cm³ : 4.00
1000 : (8.00)

Remarks:

RATED SPEED

1st version
Control lever
position degrees: 114...122

Testing:

1st rack travel in: 10.00
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 85...93

Testing:

Speed rpm : 200
Minimum rack travel: 8.80
Speed rpm : 300
Rack travel in mm : 7.20...7.40

CONSTANT REGULATION

Speed rpm : 300...500

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del. quantity cm³/ : 116.0...119.0
1000 s: (113.0...122.0)
Spread cm³ : 5.00
1000 s: (9.00)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.00
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 130.0...150.0
1000 s: (126.0...154.0)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 6,2 f
 Edition : 21.01.93
 Replaces : 12.91
 Test oil : ISO-4113

Combination no. : 0 402 046 811

Injection pump
 Pump designation : PES6P110A32ORS3233
 EP type number : 0 412 016 728
 Governor
 Governor design. : RQV275...1175PA833-4
 Governor no. : 0 421 813 762

Customer-spec. information
 Customer : RVI

Engine : MIDR 060226D

1st version kW : 166.0
 Rated speed : 2350

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.20...4.30
 : (4.15...4.35)
 Rack travel in mm : 18.00...21.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 3.90...4.10
 & maximum rack tra: 13.0...14.0
 Difference ° CS : 4.50...6.00

BASIC SETTING

1st speed rpm : 1175

Rack travel in mm : 13.50...13.60

Del. quantity cm³/ : 11.7...11.9

100 s: (11.4...12.1)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 275.0

Rack travel in mm : 5.2...5.6

Del. quantity cm³/ : 3.2...3.8

100 s: (2.9...4.0)

Spread cm³ : 0.4

100 s: (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 0.40...0.60

2nd speed rpm : 450

travel mm : 2.90...3.50

3rd speed rpm : 800

travel mm : 4.60...5.00

4th speed rpm : 1175

travel mm : 6.90...7.10

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1430

Rack travel in mm : 12.20...14.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1175

Aneroid pressure h: 1000
Del. quantity : 117.0...119.0
1000 : (114.5...121.5)
Spread cm³ : 4.00
1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 113...121

Testing:

1st rack travel in: 12.50
Speed rpm : 1240...1250
2nd rack travel in: 4.90
Speed rpm : 1405...1435
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 80...88

Testing:

Speed rpm : 200
Minimum rack travel: 7.70
Speed rpm : 275
Rack travel in mm : 5.30...5.50

CONSTANT REGULATION

Speed rpm : 250...350

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 13.50...13.60

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.40...10.00
2nd pressure hPa : 200
Rack travel in m: 10.60...10.70
3rd pressure hPa : 440
Rack travel in m: 12.40...12.80

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 700
Del. quantity cm³/ : 111.5...116.5
1000 s: (108.5...119.5)

Aneroid pressure h: -

Speed rpm : 500
Del. quantity cm³/ : 51.0...53.0
1000 s: (48.5...55.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.50
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 82.0...102.0
1000 s: (78.0...106.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.20...5.60
Del. quantity cm³/ : 32.0...38.0
1000 s: (29.5...40.5)
Spread cm³ : 4.50
1000 s: (7.50)

Remarks:

:

Start-of-delivery blocking at start of
delivery of cylinder no. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 9,6 y
 Edition : 21.01.93
 Replaces : 07.90
 Test oil : ISO-4113

Combination no. : 0 402 046 817

Injection pump
 Pump designation : PES6P110A72ORS3104
 EP type number : 0 412 016 712
 Governor
 Governor design. : RGV300...1150FA850-5
 Governor no. : 0 421 813 871

Customer-spec. information
 Customer : KHD

Engine : BF6L513R

1st version kW : 177.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

N19

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1150
 Rack travel in mm : 13.40...13.50
 Del. quantity cm³/ : 15.1...15.3
 100 s : (14.8...15.6)
 Spread cm³ : 0.4
 100 s : (0.7)

2nd speed rpm : 300.0
 Rack travel in mm : 7.9...8.1
 Del. quantity cm³/ : 1.6...2.2
 100 s : (1.3...2.4)
 Spread cm³ : 0.4
 100 s : (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 2.10...2.50
 2nd speed rpm : 450
 travel mm : 3.40...4.00
 3rd speed rpm : 700
 travel mm : 5.10...5.70
 4th speed rpm : 1190
 travel mm : 8.90...9.10
 5th speed rpm : 1300
 travel mm : 10.00...10.40

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1190
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1150
 Aneroid pressure h: 900
 Del. quantity : 151.0...153.0
 1000 : (148.0...156.0)
 Spread cm³ : 4.00
 1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 119...127

Testing:
1st rack travel in: 12.40
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1310...1340
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 89...97

Testing:
Speed rpm : 100
Minimum rack trave: 9.40
Speed rpm : 300
Rack travel in mm : 7.90...8.10

CONSTANT REGULATION

Speed rpm : 320...520

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 450
Pressure hPa : 900
Rack travel mm : 13.40...13.50

Measurement

Speed 1/min : 450

1st pressure hPa : -
Rack travel in m: 12.40...12.60
2nd pressure hPa : 510
Rack travel in m: 13.20...13.30
3rd pressure hPa : 410
Rack travel in m: 12.70...12.90

START CUT-OUT

Speed 1/min : 250 (270)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 600
Del.quantity cm3/ : 153.0...157.0
1000 s: (151.0...159.0)

Aneroid pressure h: -
Speed rpm : 450
Del.quantity cm3/ : 123.0...125.0
1000 s: (120.0...128.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.40
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 170.0...200.0
1000 s: (166.0...204.0)

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

APPLICATION

Combine-harvester

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI
 Edition : 25.09.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 046 823
 Injection pump
 Pump designation : PES6P120A320RS3279
 EP type number : 0 412 026 748
 Governor
 Governor design. : RQ275/1050PA999
 Governor no. : 0 421 801 585

Customer-spec. information

Customer : RVI
 Engine : MIDR D62045 D/3
 1st version kW : 222.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder assembly : 1 688 901 105
 Opening pressure, bar : 207...210
 Orifice plate diameter mm : 0,8
 Test lines : 1 680 750 089
 Outside diameter x wall thickness x Length mm : 8.00X2.50X600
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 650
 Rack travel in mm : 11.80...11.90
 Del. quantity cm³/ : 18.8...19.0
 100 s : (18.5...19.3)
 Spread cm³ : 0.5
 100 s : (0.9)
 2nd speed rpm : 275.0
 Rack travel in mm : 5.9...6.3
 Del. quantity cm³/ : 1.9...2.3
 100 s : (1.6...2.6)
 Spread cm³ : 0.8
 100 s : (1.2)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 650
 Aneroid pressure h: 1000
 Del. quantity : 188.0...190.0
 1000 : (185.0...193.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600
 Rack travel in mm : 20.0
 Testing:
 1st rack travel in: 10.80
 Speed rpm : 1130...1145
 2nd rack travel in: 4.00

Speed rpm : 1225...1255
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 275
Rack travel in mm : 6.1

Testing:

Speed rpm : 175
Minimum rack travel: 7.60
Speed rpm : 275
Rack travel in mm : 6.00...6.20

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 650
Rack travel in m: 11.80...11.90
2nd speed rpm : 1050
Rack travel in m: 11.30...11.50

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 11.80...11.90

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.30...8.50
2nd pressure hPa : 280
Rack travel in m: 9.40...9.50
3rd pressure hPa : 560
Rack travel in m: 11.00...11.40

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 1050
Del.quantity cm³/ : 173.0...179.0
1000 s: (170.0...182.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 85.0...87.0
1000 s: (82.0...90.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.80
Speed rpm : 1130...1145

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 145.0...175.0
1000 s: (141.0...179.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.90...6.30
Del.quantity cm³/ : 19.0...23.0
1000 s: (16.0...26.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

Start-of-delivery blocking at start of
delivery of cylinder no. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI
 Edition : 25.09.92
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 046 824
 Injection pump
 Pump designation : PES6P120A32ORS3279-1
 EP type number : 0 412 026 758
 Governor
 Governor design. : RQ275/1050PA99-5
 Governor no. : 0 421 801 663

Customer-spec. information
 Customer : RVI

Engine : MIHR 062045 A/3

1st version kW : 188.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test Lines : 1 680 750 080

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 11.00...11.10
 Del.quantity cm3/ : 15.4...15.6
 100 s: (15.1...15.9)
 Spread cm3 : 0.5
 100 s: (0.9)

2nd speed rpm : 275.0
 Rack travel in mm : 4.7...5.1
 Del.quantity cm3/ : 1.7...2.1
 100 s: (1.4...2.4)
 Spread cm3 : 0.8
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 1000
 Del.quantity : 154.0...156.0
 1000 : (151.0...159.0)
 Spread cm3 : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600
 Rack travel in mm : 20.0

Testing:
 1st rack travel in: 10.00
 Speed rpm : 1130...1145
 2nd rack travel in: 4.00

Speed rpm : 1235...1265
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 275
Rack travel in mm : 6.0

Testing:

Speed rpm : 175
Minimum rack travel: 7.50
Speed rpm : 275
Rack travel in mm : 5.90...6.10

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 700
Rack travel in m: 11.00...11.10
2nd speed rpm : 1050
Rack travel in m: 11.30...11.50

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 11.00...11.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.80...10.00
2nd pressure hPa : 160
Rack travel in m: 10.20...10.30
3rd pressure hPa : 220
Rack travel in m: 10.50...10.80

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 1050
Del. quantity cm³/ : 148.0...154.0
1000 s: (145.0...157.0)

Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 111.0...113.0
1000 s: (108.0...116.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.00
Speed rpm : 1130...1145

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 145.0...165.0
1000 s: (141.0...169.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.80...6.20
Del. quantity cm³/ : 17.0...21.0
1000 s: (14.0...24.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

Start-of-delivery blocking at start of
delivery of cylinder no. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 9,6 y 1
 Edition : 11.01.93
 Replaces : 11.91
 Test oil : ISO-4113
 Combination no. : G 402 046 832
 Injection pump
 Pump designation : PES6P110A72ORS3104
 EP type number : 0 412 016 712
 Governor
 Governor design. : RQV350...1100PA850-6
 Governor no. : 0 421 813 975

Customer-spec. information
 Customer : KHD

Engine : BF6L513RC

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 6-2-4-1-5-3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.90...14.00

Del. quantity cm³/ : 16.3...16.5

100 s : (16.0...16.8)

Spread cm³ : 0.4

100 s : (0.7)

2nd speed rpm : 350.0

Rack travel in mm : 7.8...8.0

Del. quantity cm³/ : 1.6...2.1

100 s : (1.4...2.4)

Spread cm³ : 0.4

100 s : (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.10...1.30

2nd speed rpm : 410
 travel mm : 2.60...3.20

3rd speed rpm : 590
 travel mm : 3.90...4.50

4th speed rpm : 1160
 travel mm : 8.60...8.80

5th speed rpm : 1215
 travel mm : 9.80...10.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1140

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del. quantity : 163.0...165.0

1000 : (160.0...168.0)

Spread cm³ : 4.00

1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 12.90
Speed rpm : 1130...1140
2nd rack travel in: 4.00
Speed rpm : 1190...1220
4th rack travel in: 1310
Speed rpm : 0.00...1.40

LOW IDLE 1
Control lever
position degrees: 84...92

Testing:
Speed rpm : 100
Minimum rack travel: 9.50
Speed rpm : 350
Rack travel in mm : 7.80...8.00

CONSTANT REGULATION
Speed rpm : 400...470

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.90...14.00

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 12.30...12.50
2nd pressure hPa : 450
Rack travel in m: 13.40...13.50
3rd pressure hPa : 370
Rack travel in m: 12.70...12.90

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 700
Del. quantity cm³/ : 162.0...166.0
1000 s: (159.0...169.0)
Spread cm³ : 6.00
1000 s: (9.00)
Aneroid pressure h: -

Speed rpm : 450
Del. quantity cm³/ : 123.0...125.0
1000 s: (120.0...128.0)
Spread cm³ : 4.00
1000 s: (7.50)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.90
Speed rpm : 1130...1140

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 170.0...200.0
1000 s: (166.0...204.0)

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI
 Edition : 22.01.93
 Replaces : 07.92
 Test oil : ISO-4113
 Combination no. : 0 402 046 836
 Injection pump
 Pump designation : PES6P120A320RS3303
 EP type number : 0 412 026 755
 Governor
 Governor design. : RQV275...1050PA1038K
 Governor no. : 0 421 815 313

Customer-spec. information

Customer : RVI
 Engine : MIDR 062045 J/3
 1st version kW : 169.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 105
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 089
 Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1050
 Rack travel in mm : 11.00...11.10
 Del. quantity cm³/ : 15.5...15.7
 100 s : (15.2...16.0)
 Spread cm³ : 0.5
 100 s : (0.9)
 2nd speed rpm : 275.0
 Rack travel in mm : 5.3...5.7
 Del. quantity cm³/ : 2.2...2.6
 100 s : (1.9...2.9)
 Spread cm³ : 0.8
 100 s : (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1140
 travel mm : 8.90...9.10
 2nd speed rpm : 275
 travel mm : 1.20...1.40
 3rd speed rpm : 380
 travel mm : 2.90...3.50
 4th speed rpm : 740
 travel mm : 6.00...6.40
 5th speed rpm : 1480
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1330
 Rack travel in mm : 7.90...11.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1050
 Del. quantity : 155.0...157.0
 1000 : (152.0...160.0)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 283...291

Testing:
1st rack travel in: 10.00
Speed rpm : 1115...1125
2nd rack travel in: 4.00
Speed rpm : 1235...1265
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 238...246

Testing:
Speed rpm : 200
Minimum rack travel: 6.30
Speed rpm : 275
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION
Speed rpm : 280...380

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 11.00...11.10
2nd speed rpm : 700
Rack travel in m: 10.10...10.30

START CUT-OUT

Speed 1/min : 210 (230)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 700
Del. quantity cm³/ : 133.0...139.0
1000 s: (130.0...142.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.00
Speed rpm : 1115...1125

STARTING FUEL DELIVERY

N28

Speed rpm : 100
Del. quantity cm³/ : 155.0...185.0
1000 s: (151.0...189.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : -5.30...-5.70
Del. quantity cm³/ : 22.0...26.0
1000 s: (19.0...29.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

:
Start-of-delivery blocking at start of
delivery of cylinder no. 1.